DOCUMENT RESUME

ED 188 902 SE 031 210

| | |
|---|---|
| TITLE | CSMP Mathematics for the Intermediate Grades, Part VI, Student Materials: Worksheets: Collage of Problems 1, 2, 3, 4, 5, 6. |
| INSTITUTION | Central Midwestern Regional Educational Lab., St. Ann, Mo. |
| SPONS AGENCY | National Inst. of Education (DHEW), Washington, D.C. |
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| NOTE | 284p.: For related documents, see SE 031 204-209 and ED 175 634-652. Not available in hard copy due to copyright restrictions. Contains colored charts and activities which may not reproduce well. |
| EDRS PRICE | MF01 Plus Postage. PC Not Available from EDRS. |
| DESCRIPTORS | Algorithms: Decimal Fractions: *Drills (Practice): Elementary Education: *Elementary School Mathematics: Fractions: Geometric Concepts: *Grade 6: Mathematics Curriculum: Mathematics Instruction: *Mathematics Materials: Measurement: *Number Concepts: *Worksheets |
| IDENTIFIERS | *Comprehensive School Mathematics Program |

ABSTRACT

These are some of the individual materials needed by students using the Comprehensive School Mathematics Program for the Intermediate Grades, Part VI. The book of "Worksheets" contains materials that are labeled with the same letter and number as the lessons with which they are to be used. The six "Collage of Problems" booklets provide exercises on a wide variety of topics including: integer operations, decimals, fractions, prime numbers, percents, and graphing. (MK)

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# CSMP Mathematics for the Intermediate Grades Part VI

Comprehensive School Mathematics Program
CEMREL, Inc.
Experimental Version
6-39501

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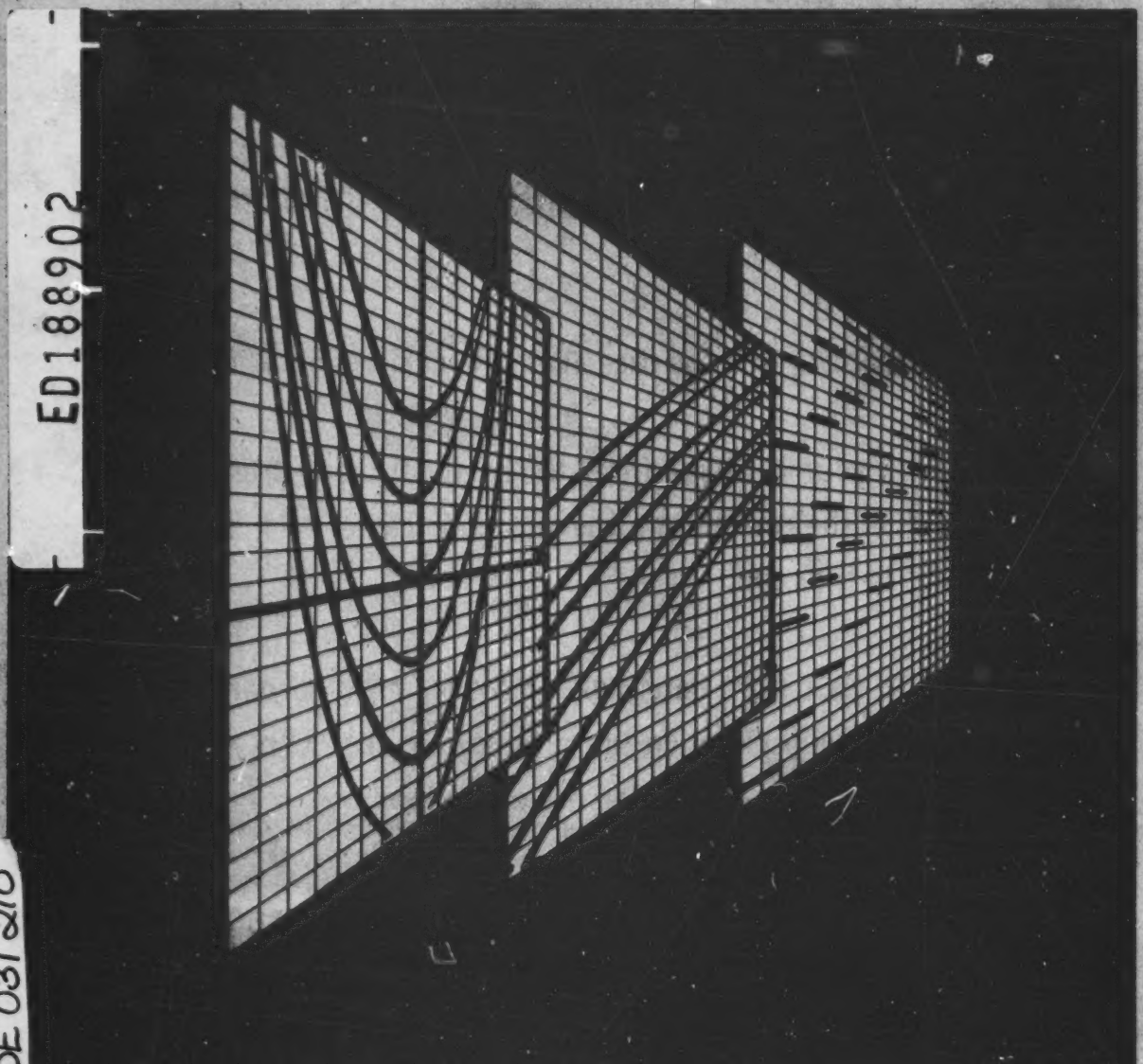
SE

Name _____

## Worksheets



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MAY 16 1980

## WHAT'S IN THIS BOOK?

This book contains all the worksheets you will need during the semester. They are in the following order:

All the "N" worksheets — N01 through N48

All the "L" worksheets — L01 through L10

All the "G" worksheets — G01 through G6

All the "P" worksheets — P01 through P18

## HOW DO YOU REMOVE PAGES?

Step 1: Flip through until you find the page you want. The number of each worksheet is in the top right corner of the page.

Step 2: Fold and crease the page along the perforation line.

Step 3: With your left hand index finger and thumb, press down firmly left of the perforation line and along center fold, starting at the top of the book.

Step 4: With your right hand holding the top right corner of a page, tear along the perforation line. Follow the tear with your left hand holding down the center fold of the book.

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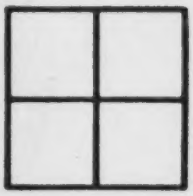
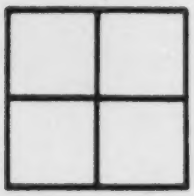
Name _____

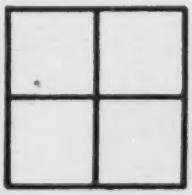
N 01 *

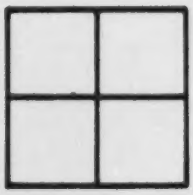
Put each of these numbers on the Minicomputer using exactly one of these checkers:

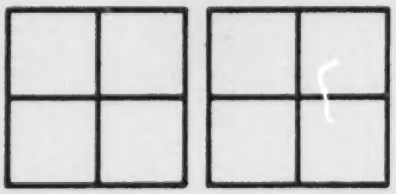
② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

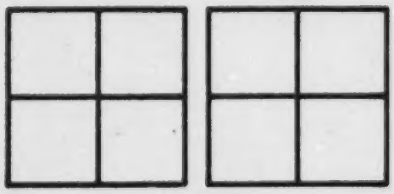
 = 20

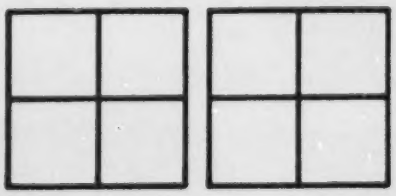
 = 32

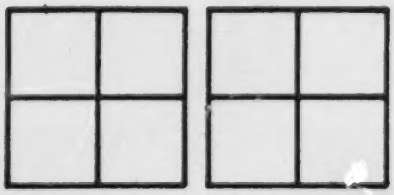
 = 18

 = 48

 = 100

 = 280

 = 360

 = 480

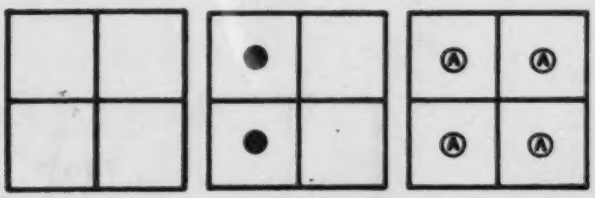
Name _____ **N 02** **

**First clue**

Paf is a prime number larger than 60 and smaller than 80.

Paf could be _____, _____, _____, _____ or _____.

**Second clue**




_____

Paf can be shown on these Minicomputer boards by moving exactly one checker to another square.

Paf could be _____, _____, or _____.

**Third clue**

$Paf =_4 9$

Paf is _____.

Name _____ **N 03** ***

Rif and Raf are secret numbers.

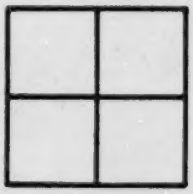
**First clue**

Rif is a prime number larger than 100 and smaller than 120.

Rif could be _____, _____, _____, _____, or _____.

**Second clue**

Raf can be put on the ones' board of the Minicomputer using just a (3)-checker and a (7)-checker.



Raf could be _____

_____

**Third clue**

$$\text{Rif} + \text{Raf} =_5 29 \text{ and } \text{Rif} =_{10} \text{Raf}$$

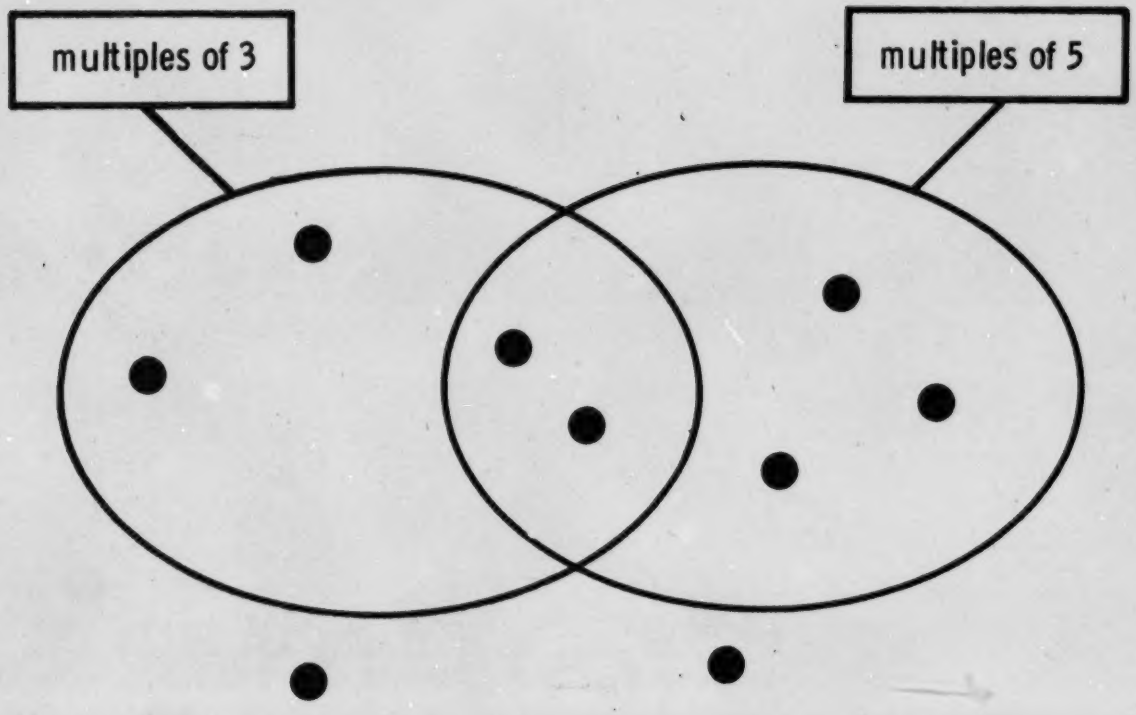
Rif is _____ and Raf is _____.

Name _____

N 04 *

Put these numbers in the string picture.

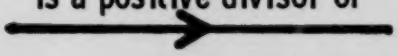
| | | |
|---|---|---|
| $5 \times 7$ | $3^3$ | 125 |
| 9 | $3 \times 5$ | $5^2$ |
| $2^3$ | $2 \times 7$ | $3^3 \times 5^2$ |



Name _____

N 05 **

Draw all of the possible blue arrows between these dots.




$2^4 \times 3^2 \times 5$ ● ● $2 \times 3^2$

$2^3$ ● ● $2^5 \times 3^3 \times 7$

$2^4 \times 3^2$ ● ● $3^2 \times 5^2$

Name _____

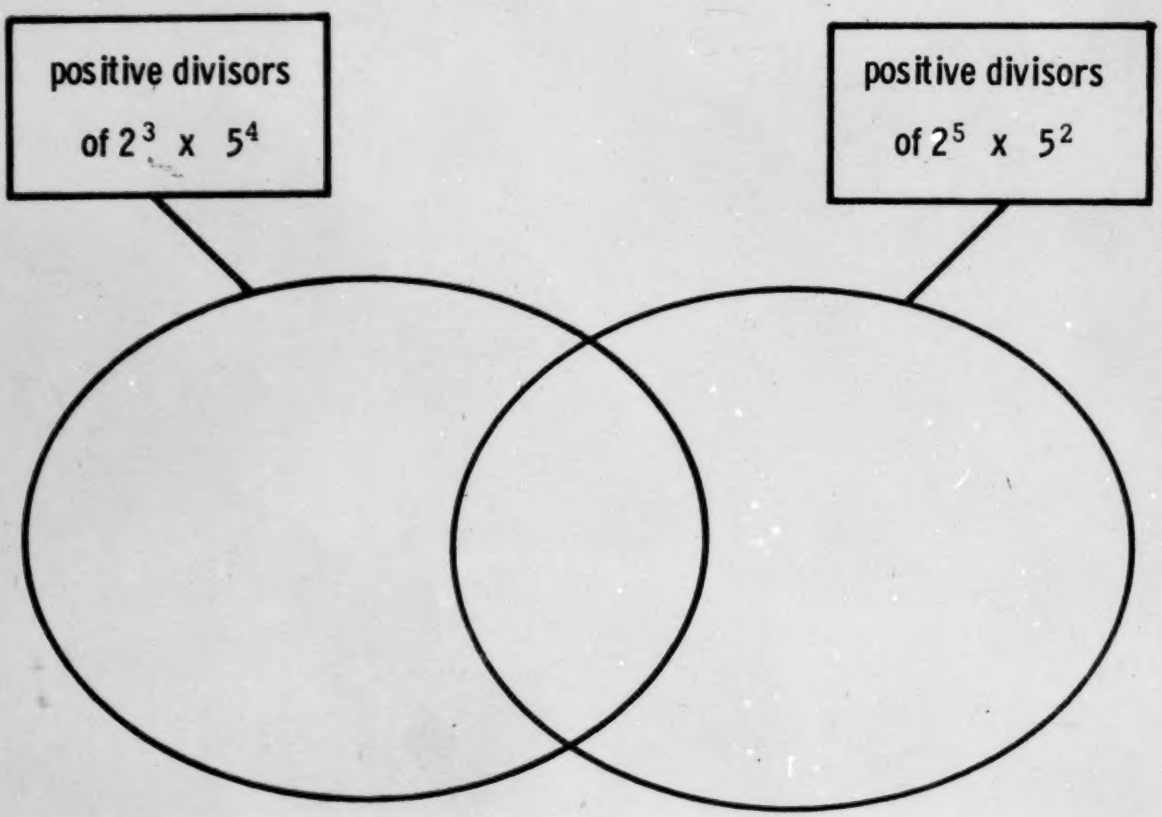
**N 06** ***

Locate these numbers in the string picture.

$2^2 \times 5$ $2^4 \times 5$ $2 \times 5^6$

$2 \times 3 \times 5$ $5^3$ $2^2 \times 5^2$

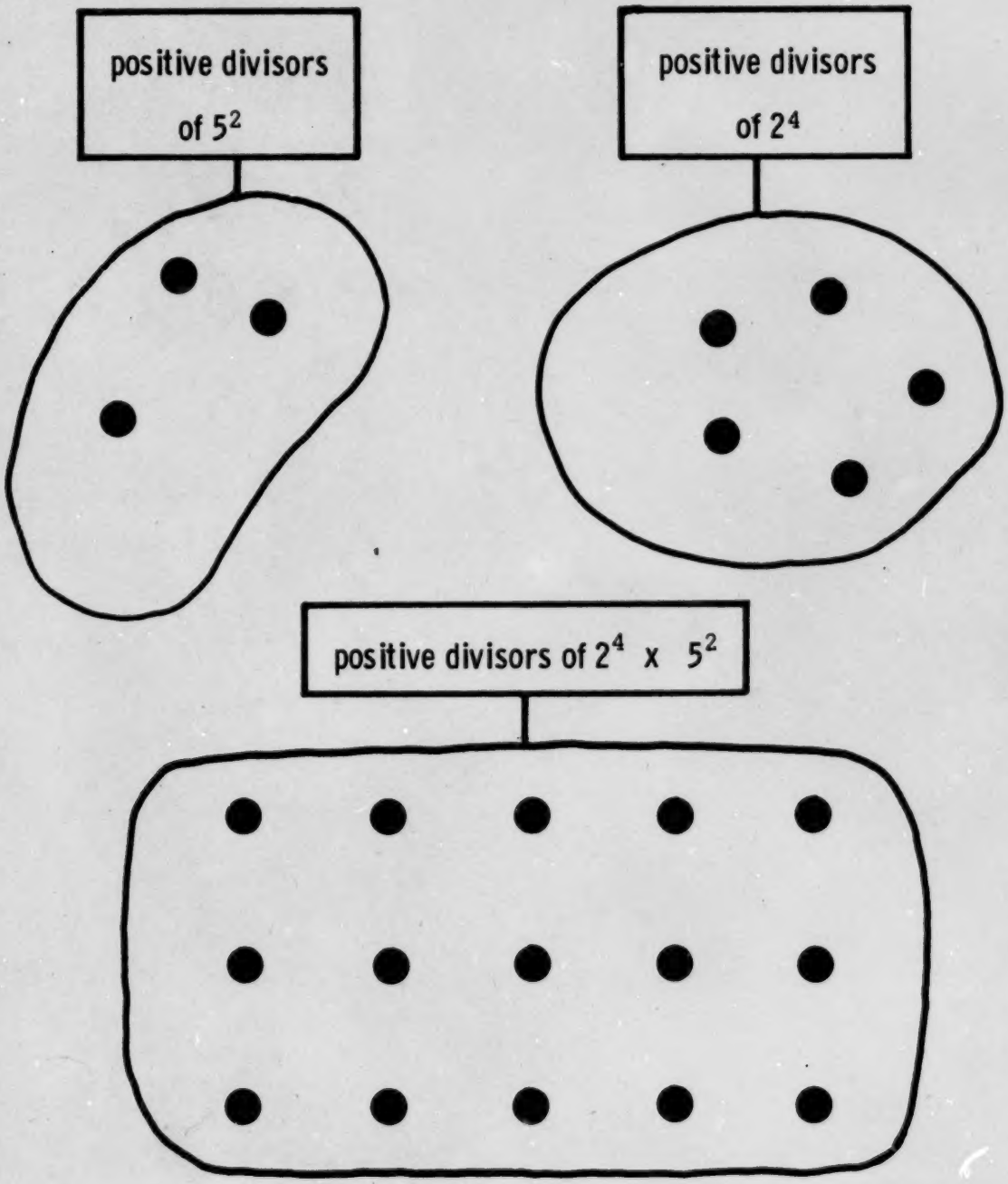
$2^8$ $2^6 \times 5$ $2^2 \times 5^3$ $2^4$



Name _____

N 07 *

Label the dots.

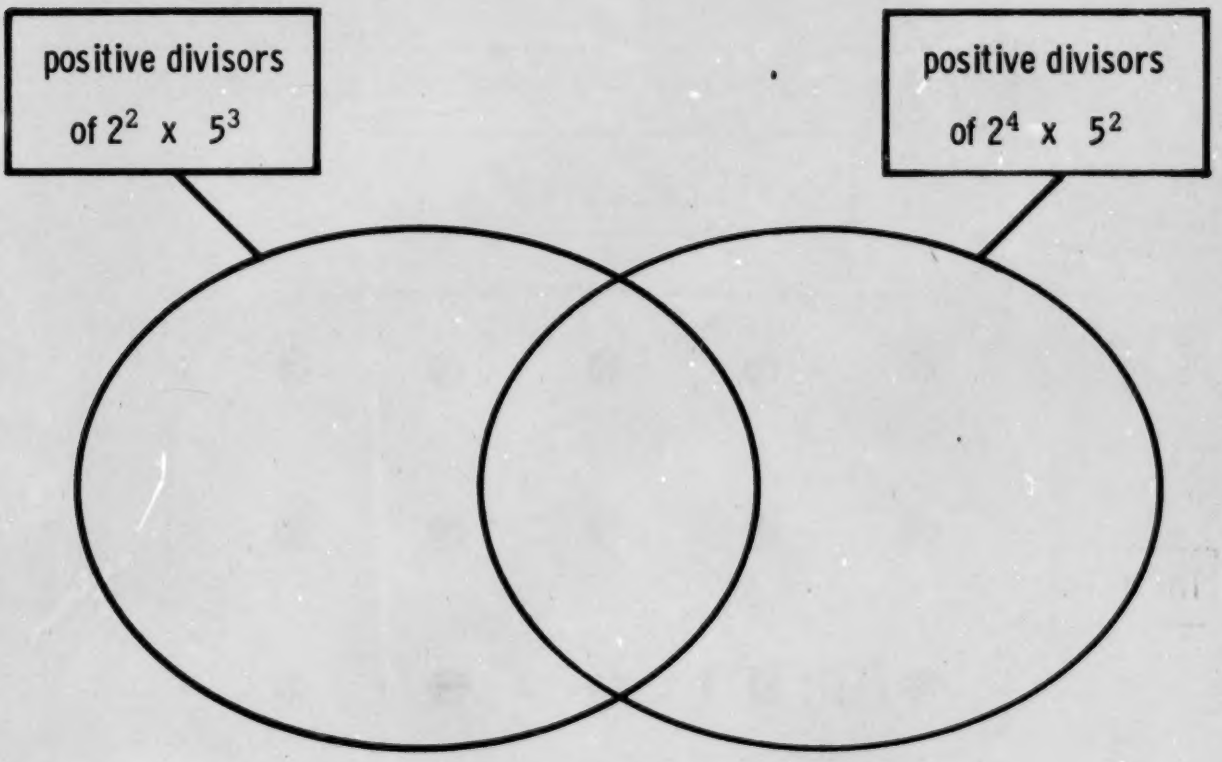


Name _____

**N 08** **

Put these numbers in the string picture.

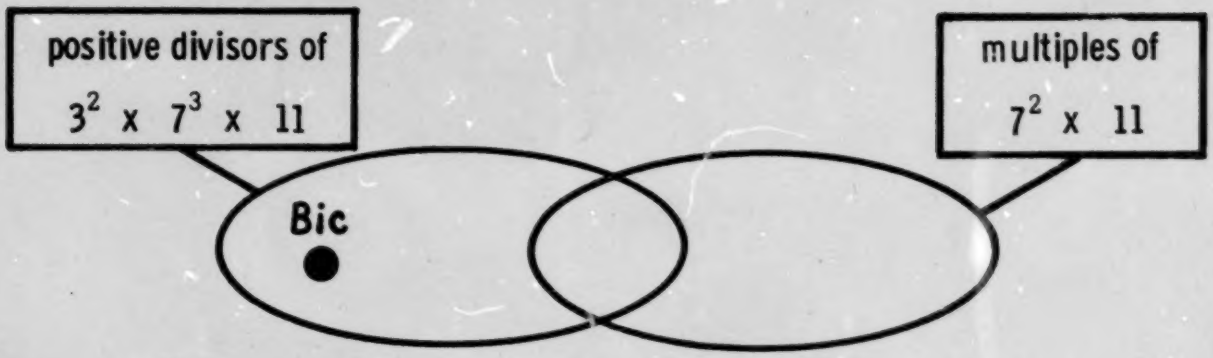
| | | |
|---|---|---|
| 1 | 2 | $2^2 \times 5^2$ |
| 5 | $5^3$ | $2 \times 5^3$ |
| $2^3$ | $5^4$ | $2^3 \times 5$ |
| $2^5$ | $2 \times 7$ | $2^3 \times 5^3$ |



Name _____ **N 09** ***

Bic is a secret number.

**First clue**

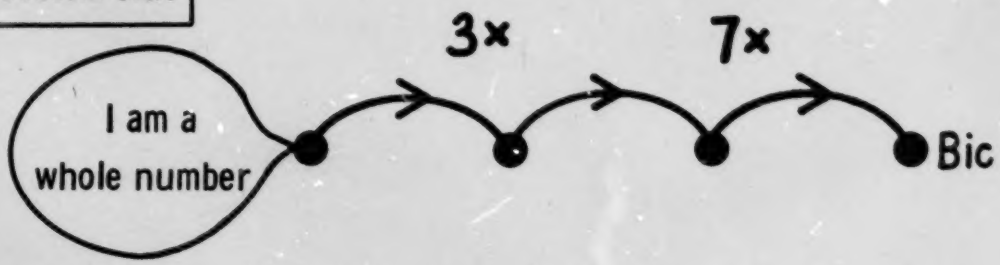



Bic could be _____

_____

(Hint: There are between fifteen and twenty possibilities for Bic.)

**Second clue**




Bic could be _____, _____, _____, or _____.

**Third clue**

$$\text{Bic} \sqcap 5 \times 7^3 = 7^2$$

Bic is _____.

Name _____ N 10 *

Put each number on the abacus and fill in the boxes.

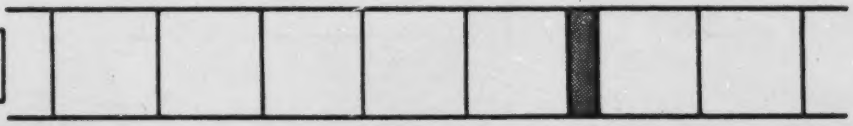
Decimal Writing

34

Base Three Writing

---

Base Four Writing




2013

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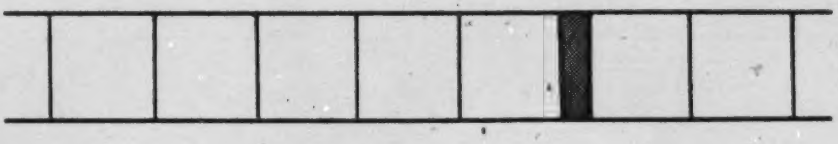
Base Five Writing

100

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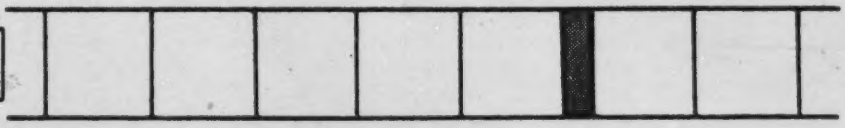
Base Six Writing




100

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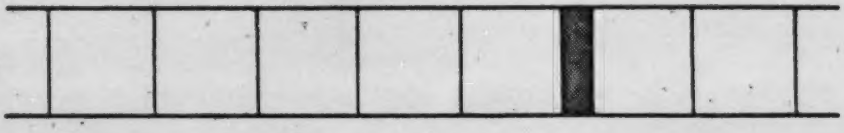
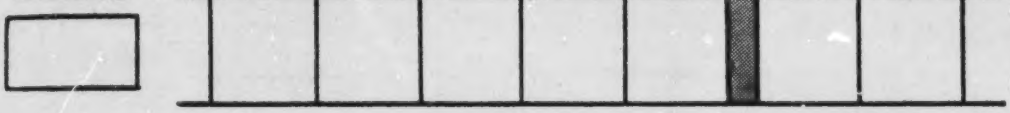
Base Seven Writing

$135\frac{1}{7}$



Decimal Writing




Base Eight Writing

2063.2

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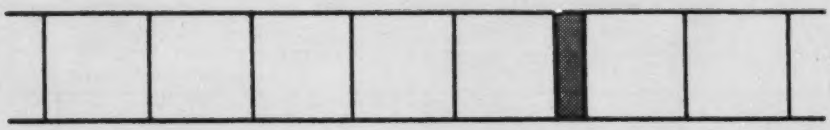
$1515\frac{2}{9}$




Base Nine Writing

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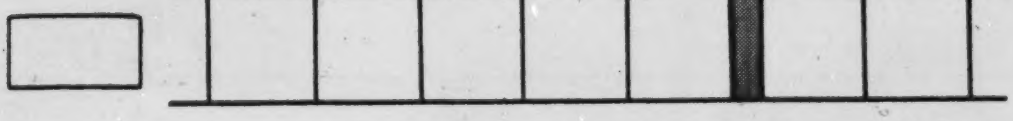


Base Ten Writing

391.25

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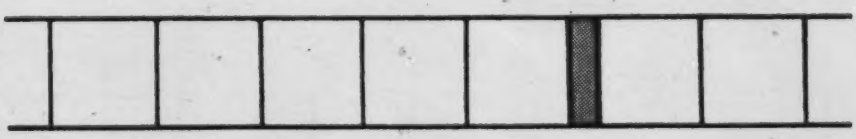
$1343\frac{1}{11}$




Base Eleven Writing

---

Base Twelve Writing

391.25

Name _____

N 11 **

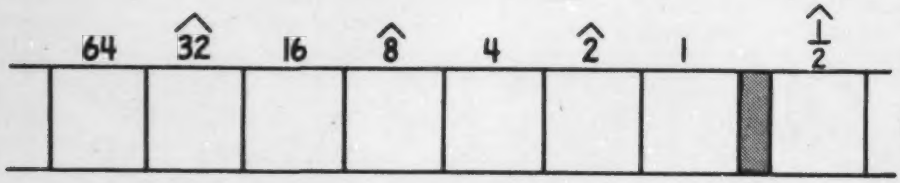
Fill in the boxes showing the base for each calculation.

| Calculation | Base |
| --- | --- |
| $15 + 12 = 30$ | |
| $2 \times 2 = 10$ | |
| $22 + 20 = 112$ | |
| $6 \times 8 = 48$ | |
| $100 + 10 = 110$ | |
| $3 \times 24 = 132$ | |

Name _____

**N 12** *

Complete.

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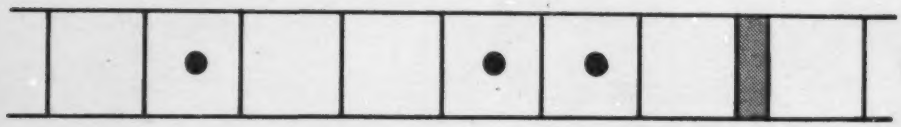
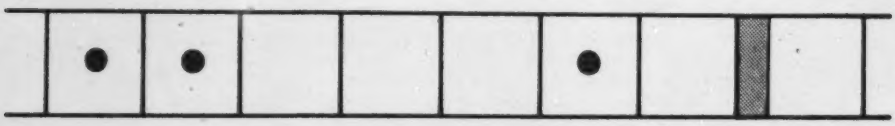


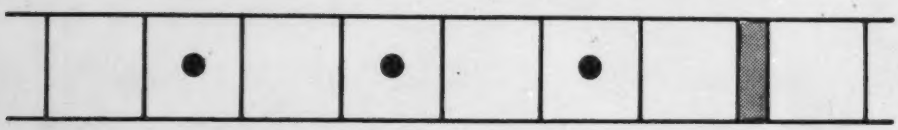
= ____

= -15



= ____

= 27 1/2

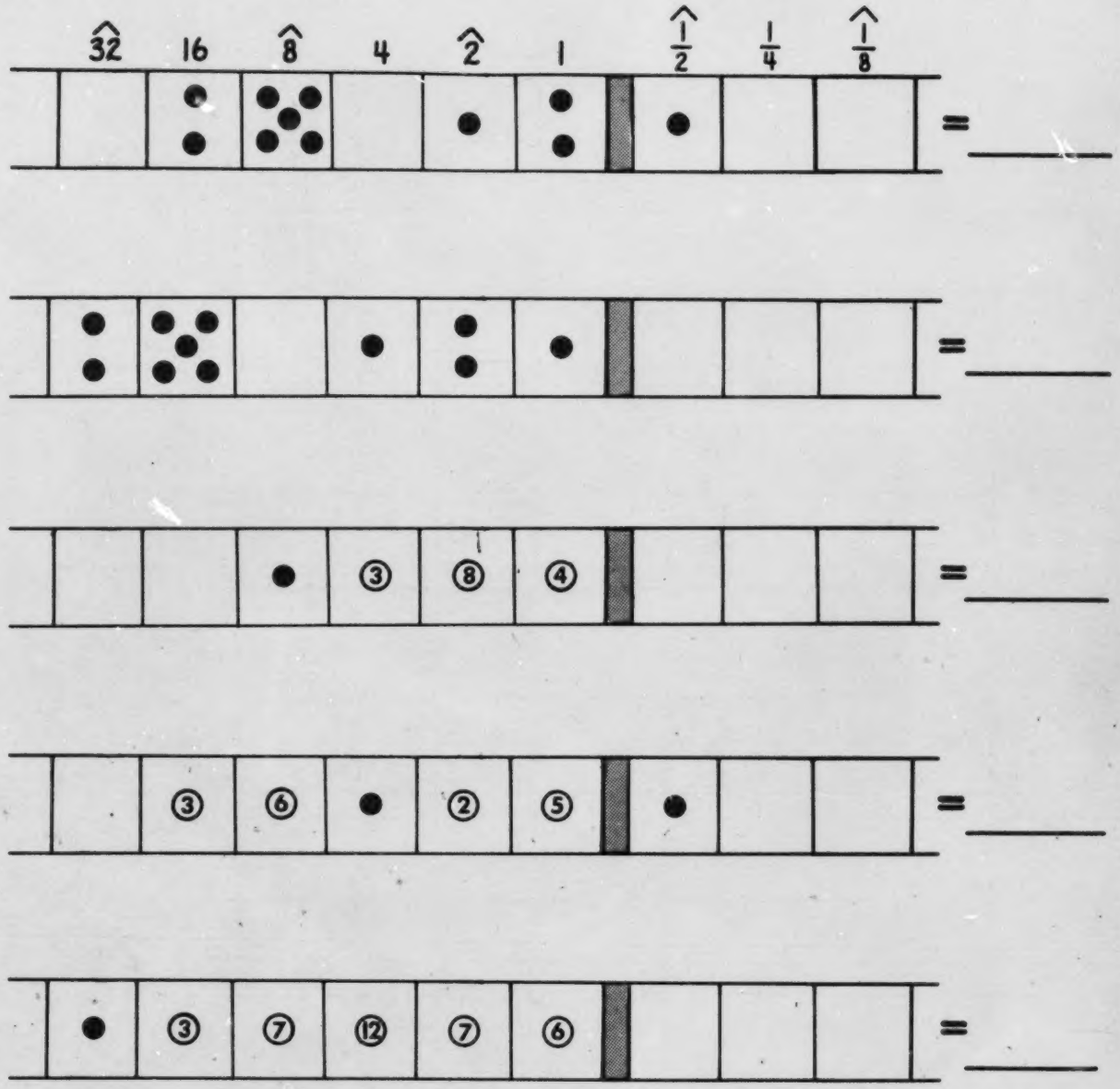


= ____

Name _____

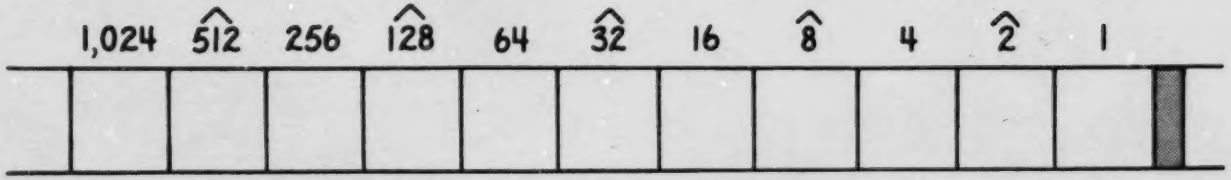
**N 13** **

Complete.



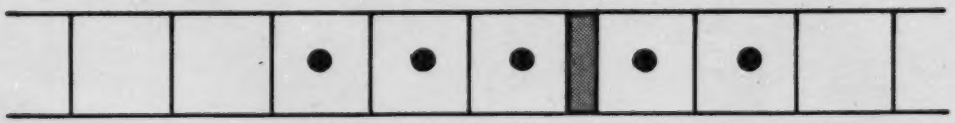
N 14 ***

Complete using at most one checker on a board.

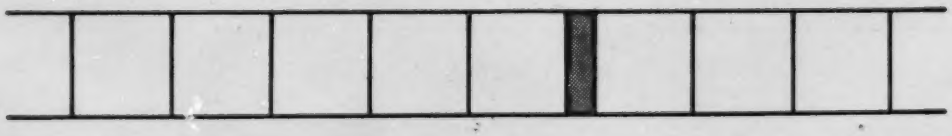



= 400

= 1,000



= _____



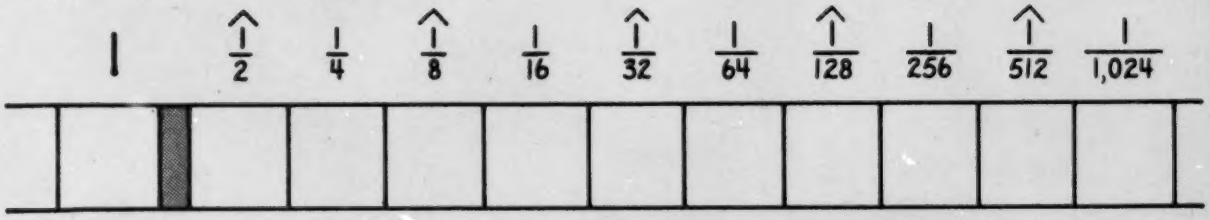
= $-9\frac{7}{8}$

Name _____

Name _____

N 15 ****

Find a Base $\hat{2}$ code name for $\frac{1}{5}$.




$\frac{1}{5}$ = _____ code $\hat{2}$

Name _____

**N 16** *

Write at least five fractions for $\frac{4}{5}$.

Write at least five fractions for $\frac{3}{4}$.

Complete the calculations.

$\frac{4}{5} + \frac{3}{4} =$ _____ $\frac{4}{5} \times \frac{3}{4} =$ _____

$\frac{4}{5} - \frac{3}{4} =$ _____ $\frac{4}{5} \div \frac{3}{4} =$ _____

Name _____

N 17 **

Draw as many red arrows as possible.

is less than →

$\frac{4}{5} + \frac{3}{4}$ ●

$\frac{4}{5} \times \frac{3}{4}$ ●

● $\frac{4}{5} - \frac{3}{4}$

● $\frac{4}{5} \div \frac{3}{4}$

Circle the smallest number in the arrow picture.

Draw a box around the largest number in the arrow picture.

Name _____

N 18 ***

Complete the tables.

| × | $\frac{3}{4}$ | $\frac{3}{2}$ |
|---|---|---|
| $\frac{5}{3}$ | | |
| 2 | | |

| + | $\frac{3}{4}$ | $\frac{3}{2}$ |
|---|---|---|
| $\frac{5}{3}$ | | |
| 2 | | |

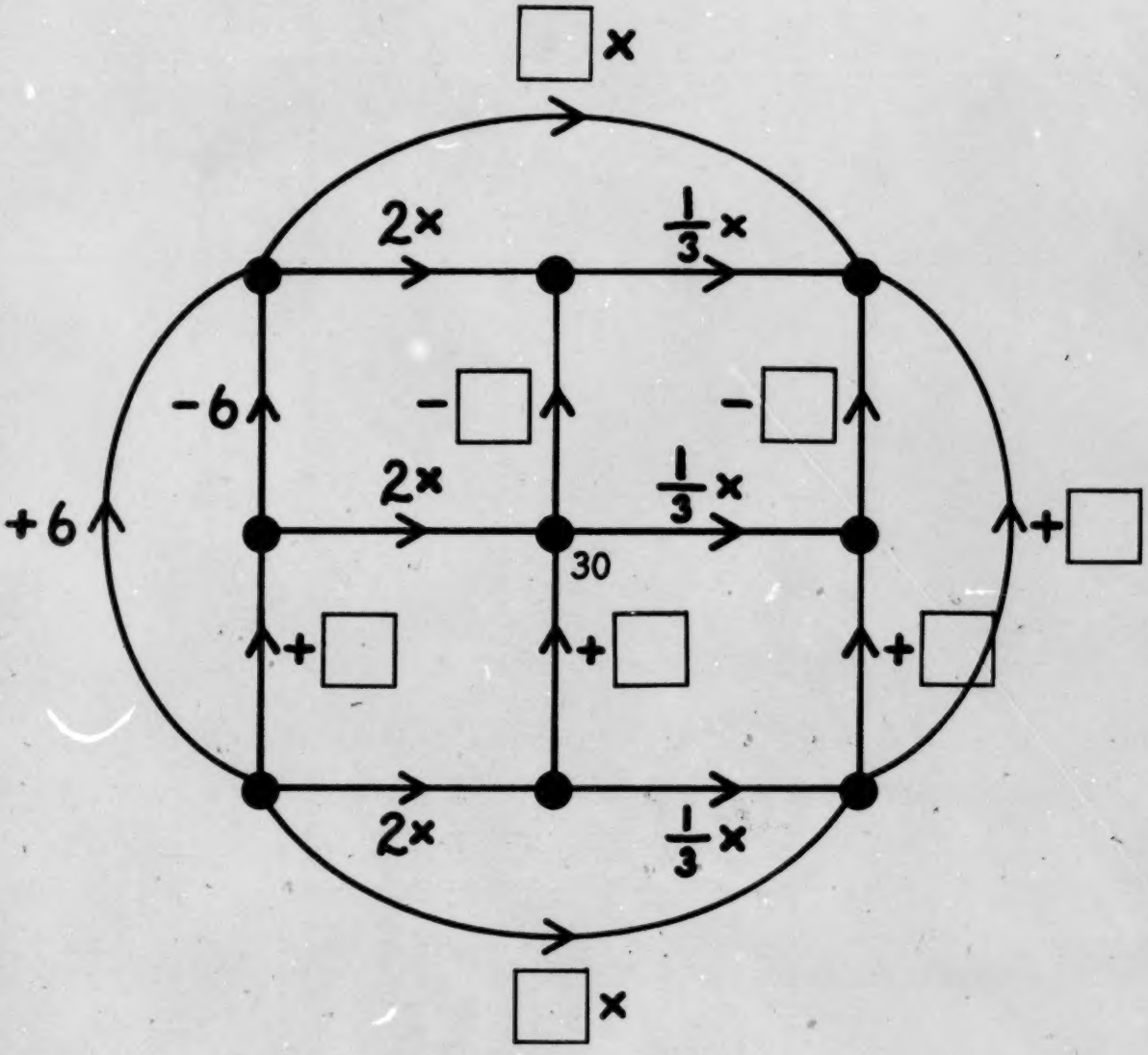
| ÷ | $\frac{3}{4}$ | $\frac{3}{2}$ |
|---|---|---|
| $\frac{5}{3}$ | | |
| 2 | | |

| − | $\frac{3}{4}$ | $\frac{3}{2}$ |
|---|---|---|
| $\frac{5}{3}$ | | |
| 2 | | |

Name _____

**N 19** *

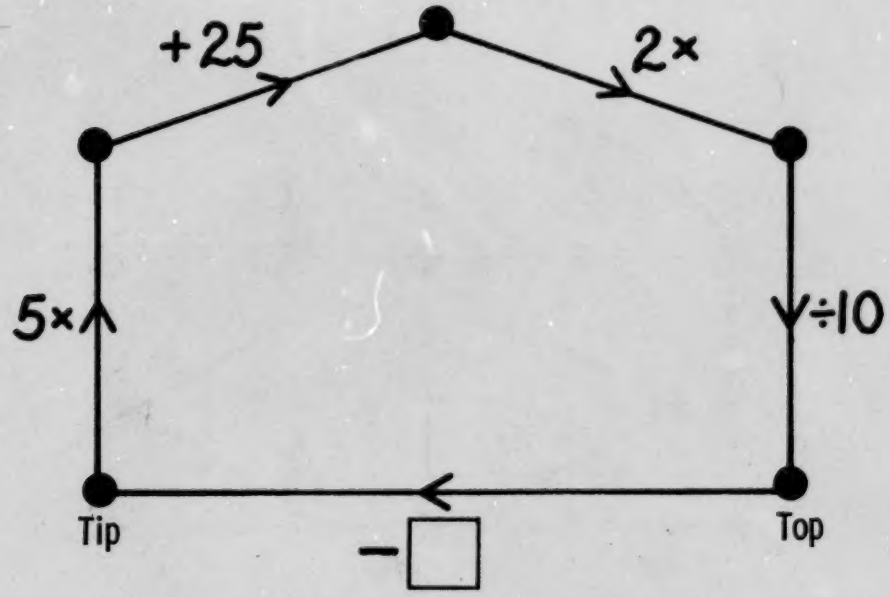
Label the dots and fill in the boxes for the arrows.



Name _____

N 20 **

Fill in the box for the arrow and complete the table.

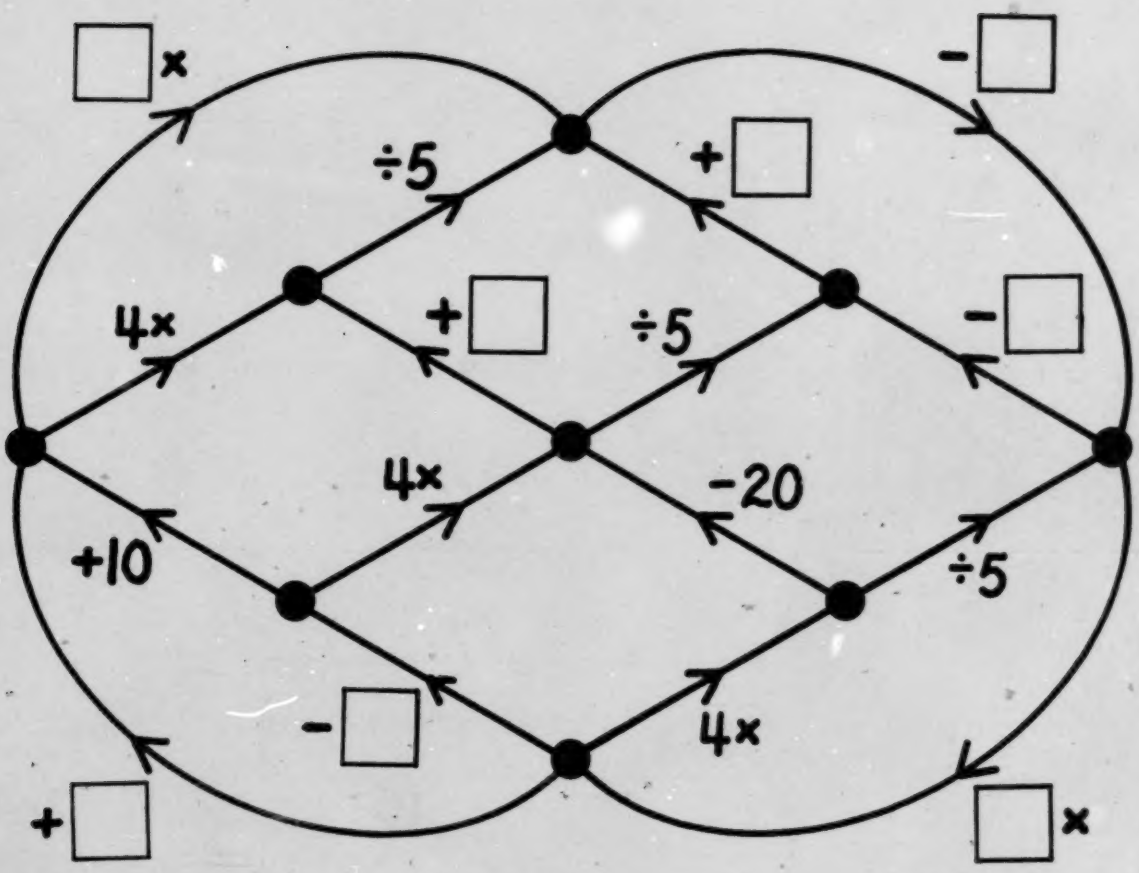



| Tip | Top |
|---|---|
| 3 | |
| | 15 |
| -3 | |
| 0.4 | |
| | 5.2 |

Name _____

**N 21** ***

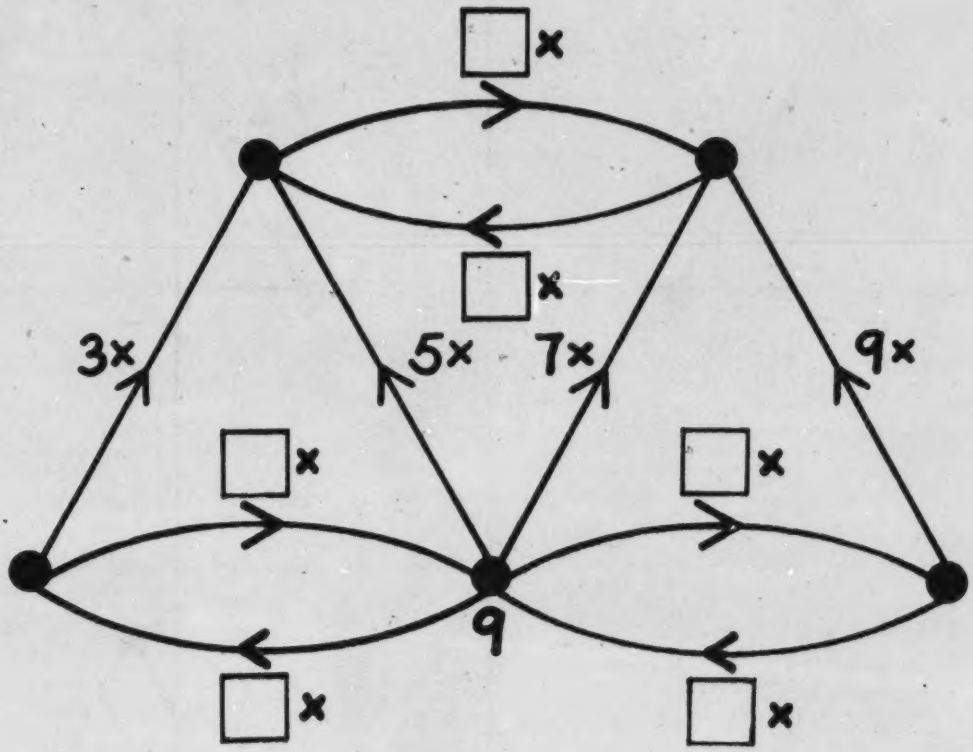
Fill in the boxes for the arrows.



Name _____

N 22 *

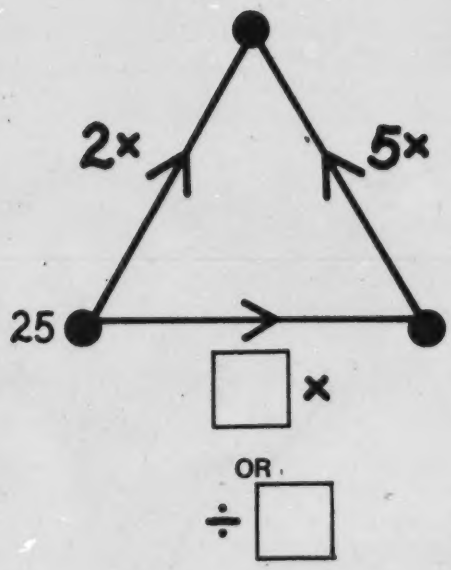
Label the dots and fill in the boxes for the arrows.

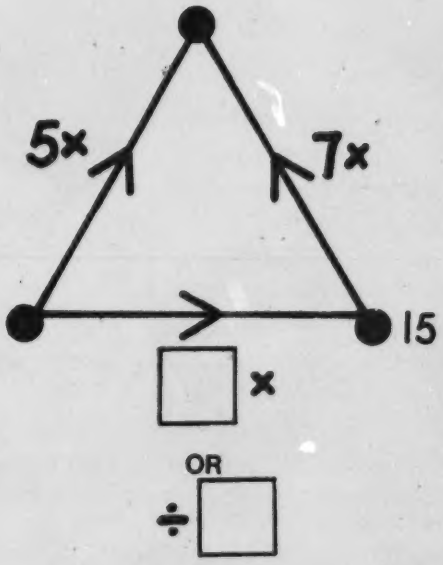


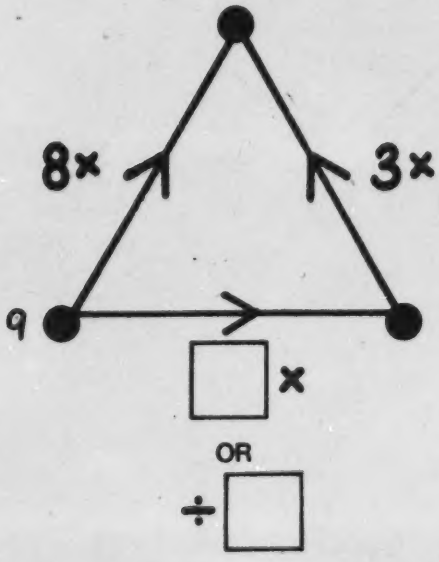
Name _____

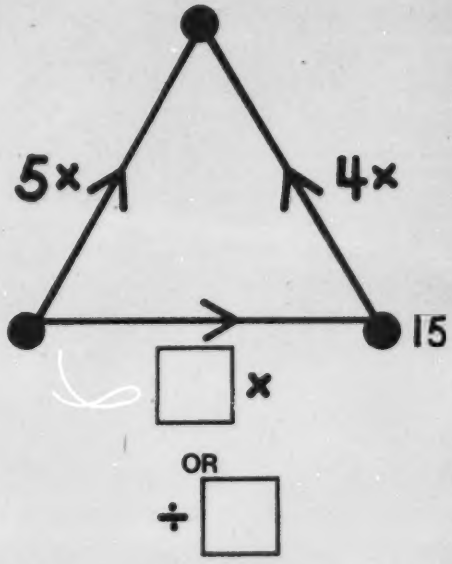
**N 23** **

Label the dots and fill in the boxes for the blue arrows.



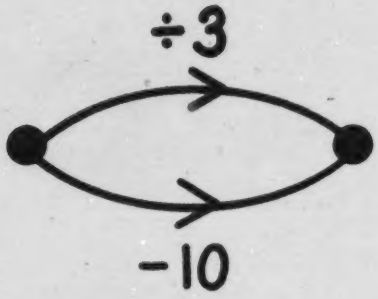



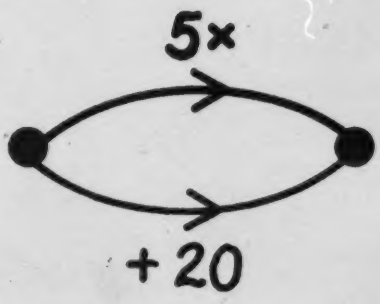



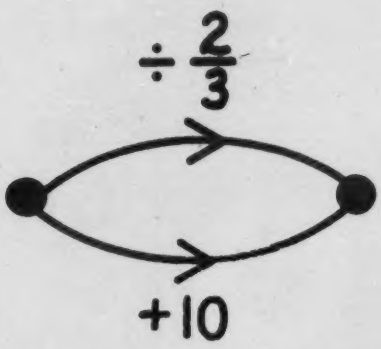
Name _____

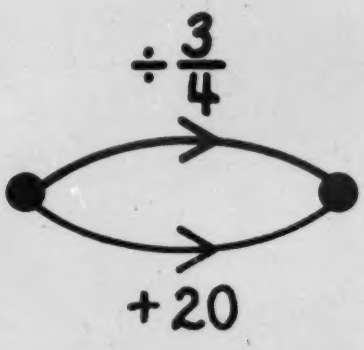
N 24 ***

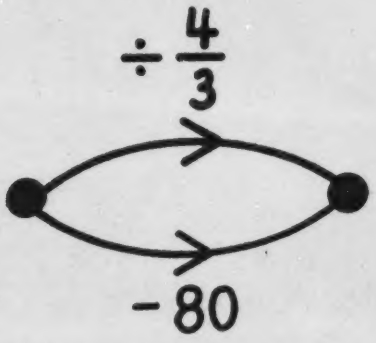
Label the dots.

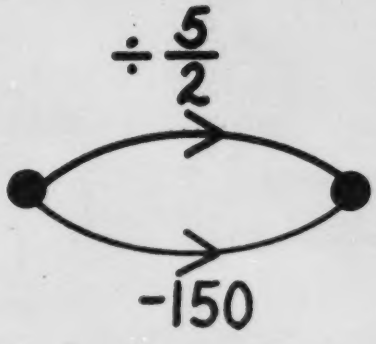


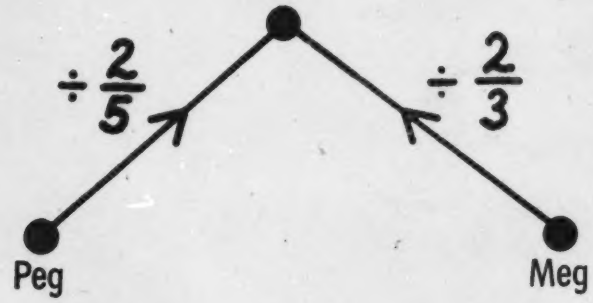



Name _____

**N 25** ****

Peg and Meg are secret whole numbers less than 75.

**First clue**




| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Peg | | | | | | | | | | | | | |
| Meg | | | | | | | | | | | | | |

**Second clue**

| $T_D$ | Peg | Meg |
|---|---|---|
| 6 | 1 | 1 |
| 4 | 1 | 1 |

Peg is _____.

Meg is _____.

Name _____ N 26

$$a * b = (a \div b) - 1$$

Complete.

$25 * 5 = \square$

$28 * 4 = \square$

$42 * \square = 5$

$\square * 6 = 0$

$\square * 9 = 8$

$19 * 2 = \square$

$\square * 8 = -1$

$7 * 5 = \square$

$\frac{7}{3} * 2 = \square$

$5 * \square = \frac{2}{3}$

$\frac{2}{3} * \frac{2}{7} = \square$

$6 * 0.1 = \square$

$8 * 0.2 = \square$

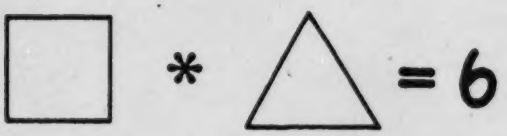
$\frac{1}{5} * \frac{1}{4} = \square$

Name _____

N 27 *

$$a * b = (a \div b) - 1$$

Complete this table.



| | |
|---|---|
| 35 | |
| | 3 |
| 7 | |
| | 10 |
| 3.5 | |
| | $\frac{2}{7}$ |
| | |
| | |

Name _____

N 28 **

$$a * b = (a \div b) - 1$$

Complete.

$51 * 17 = \square$

$225 * 25 = \square$

$4.5 * 0.5 = \square$

$2.8 * 0.1 = \square$

$2.5 * 2 = \square$

$\frac{3}{2} * \frac{1}{2} = \square$

$\frac{5}{4} * \frac{2}{3} = \square$

$\frac{2}{3} * \frac{5}{9} = \square$

$\square * 13 = 6$

$3.5 * \square = 6$

$\square * 0.1 = 7$

$\frac{9}{4} * \square = \frac{1}{8}$

$\square * \frac{1}{2} = 15$

$\frac{3}{5} * \square = \frac{4}{5}$

$\square * \frac{7}{3} = \frac{1}{7}$

$\frac{2}{5} * \square = 1$

Name _____

N 29 ***

$$a * b = (a \div b) + \frac{1}{2}$$

Complete.

$256 * 64 = \square$

$4.8 * 4 = \square$

$7.5 * 2.5 = \square$

$12.4 * 0.4 = \square$

$\frac{2}{3} * \frac{1}{6} = \square$

$\frac{3}{4} * \frac{1}{3} = \square$

$\frac{3}{8} * \frac{3}{5} = \square$

$\frac{2}{7} * \frac{3}{7} = \square$

$108 * \square = 9.5$

$\square * 5 = 2.7$

$17 * \square = 4.75$

$\square * 4 = 8$

$\frac{6}{5} * \square = 2$

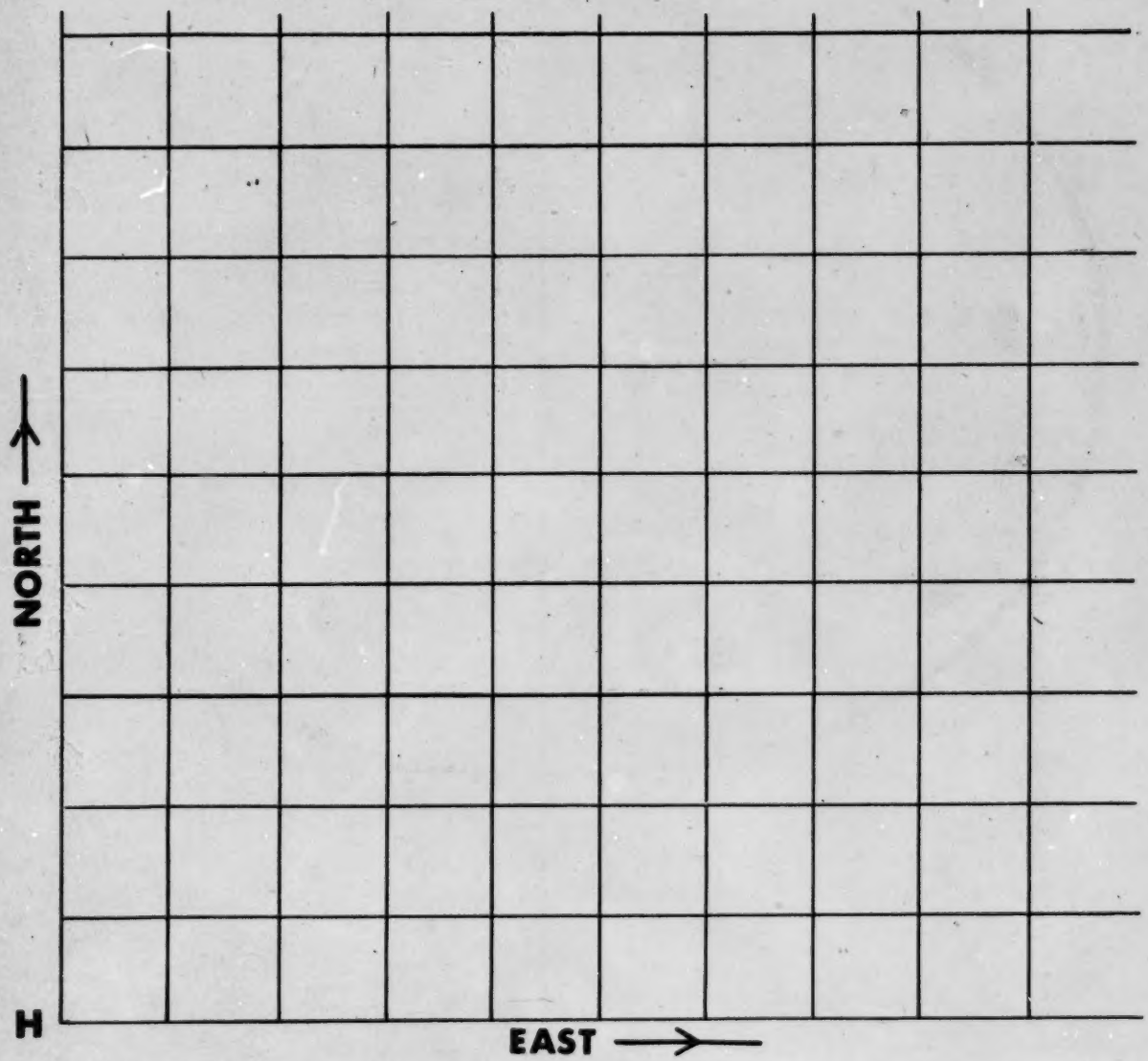
$\square * 7 = \frac{5}{8}$

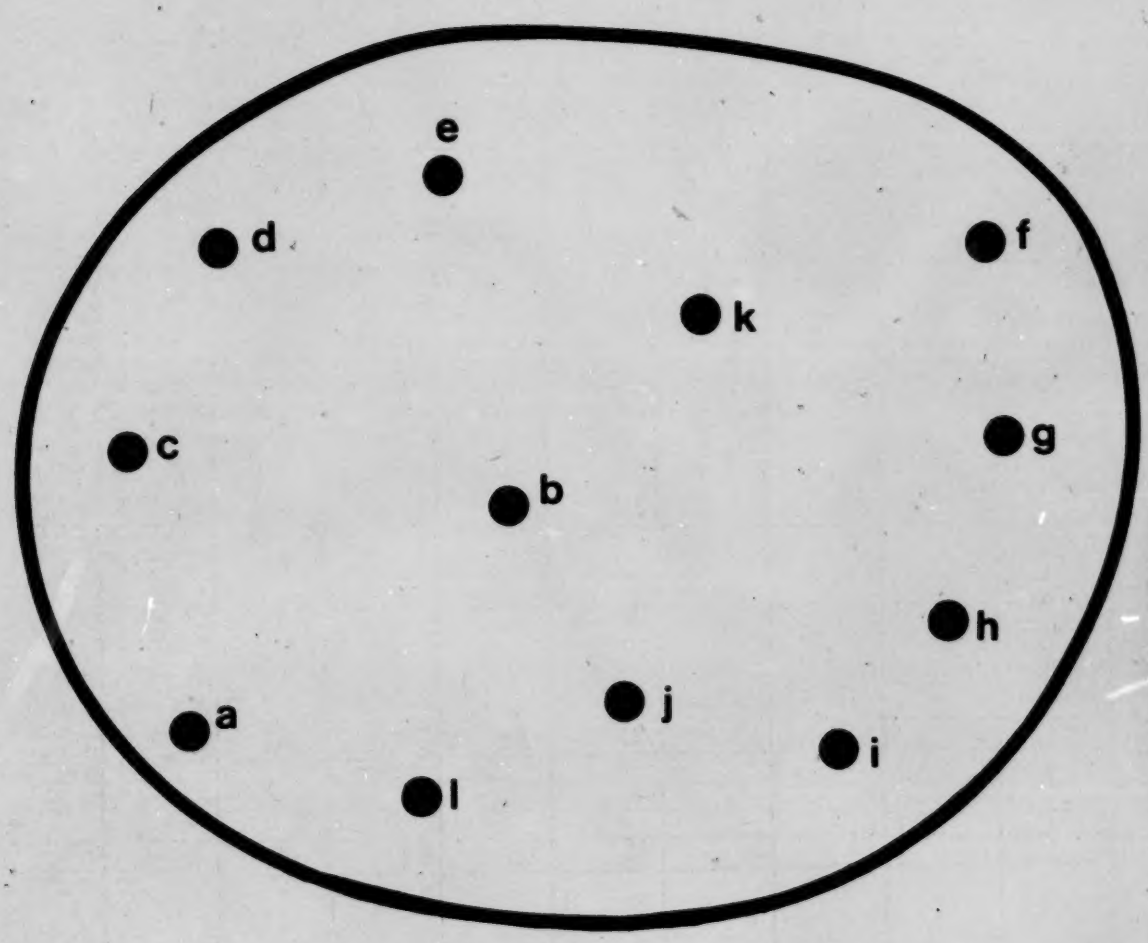
$\frac{1}{3} * \square = \frac{2}{3}$

$\square * \frac{5}{7} = \frac{3}{5}$

Name _____

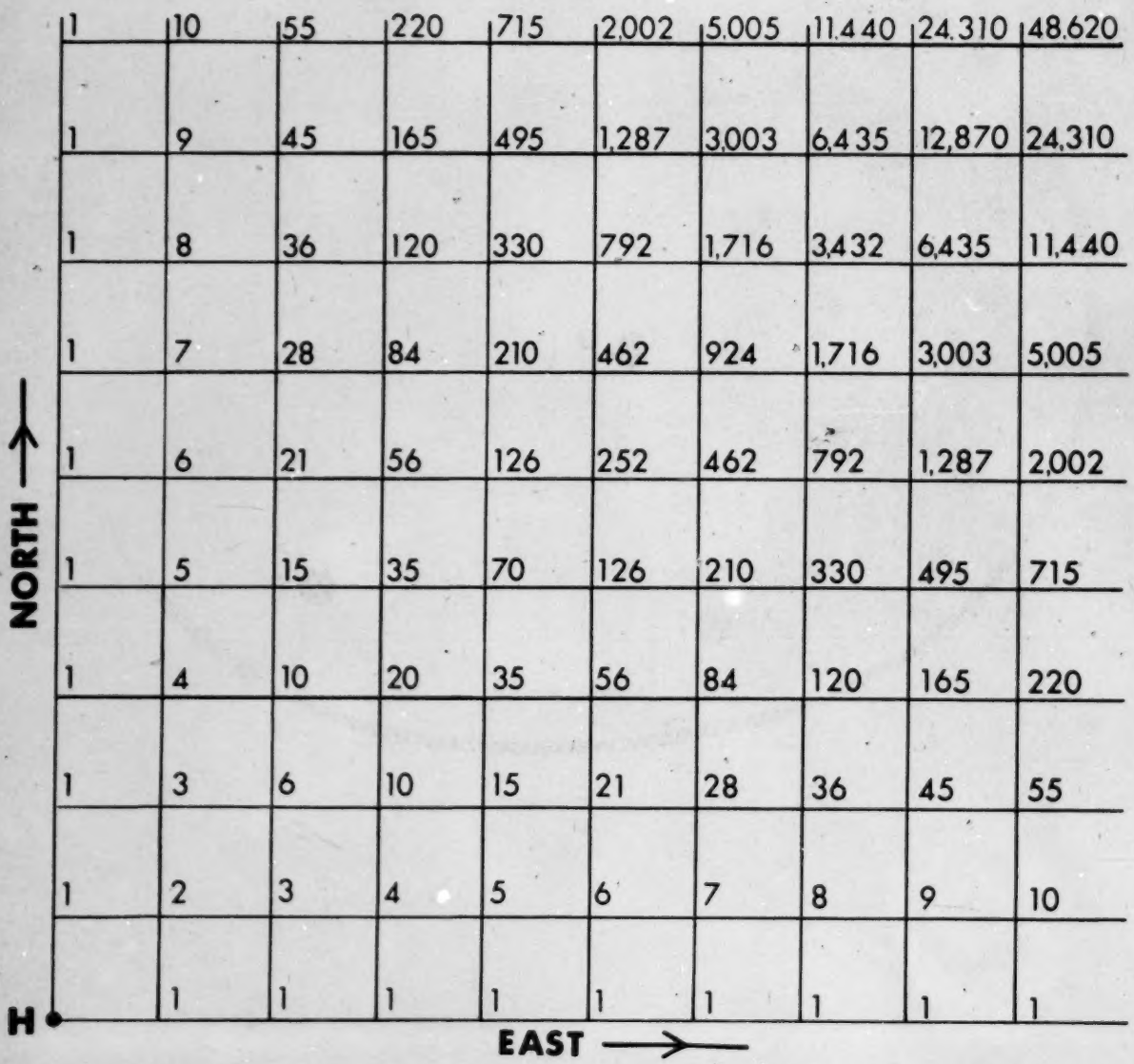
N 30




e
d
f
k
c
g
b
h
j
a
i
l

Name _____

**N 31**


1 10 55 220 715 2,002 5,005 11,440 24,310 48,620
1 9 45 165 495 1,287 3,003 6,435 12,870 24,310
1 8 36 120 330 792 1,716 3,432 6,435 11,440
1 7 28 84 210 462 924 1,716 3,003 5,005
1 6 21 56 126 252 462 792 1,287 2,002
1 5 15 35 70 126 210 330 495 715
1 4 10 20 35 56 84 120 165 220
1 3 6 10 15 21 28 36 45 55
1 2 3 4 5 6 7 8 9 10
1 1 1 1 1 1 1 1 1 1
NORTH
H
EAST

Name _____

**N 32**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 10 | 55 | 220 | 715 | 2,002 | 5,005 | 11,440 | 24,310 | 48,620 |
| 1 | 9 | 45 | 165 | 495 | 1,287 | 3,003 | 6,435 | 12,870 | 24,310 |
| 1 | 8 | 36 | 120 | 330 | 792 | 1,716 | 3,432 | 6,435 | 11,440 |
| 1 | 7 | 28 | 84 | 210 | 462 | 924 | 1,716 | 3,003 | 5,005 |
| 1 | 6 | 21 | 56 | 126 | 252 | 462 | 792 | 1,287 | 2,002 |
| 1 | 5 | 15 | 35 | 70 | 126 | 210 | 330 | 495 | 715 |
| 1 | 4 | 10 | 20 | 35 | 56 | 84 | 120 | 165 | 220 |
| 1 | 3 | 6 | 10 | 15 | 21 | 28 | 36 | 45 | 55 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

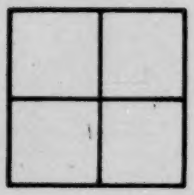
NORTH →

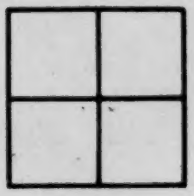
H

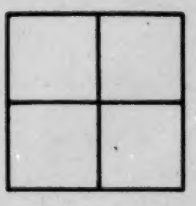
EAST →

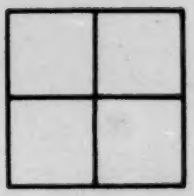
Name _____

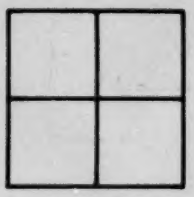
N 33

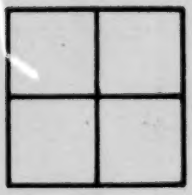
 = ____

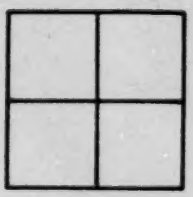
 = ____

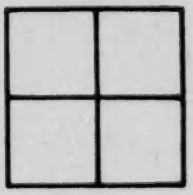
 = ____

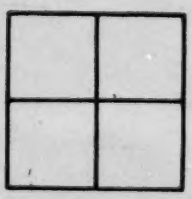
 = ____

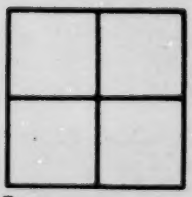
 = ____

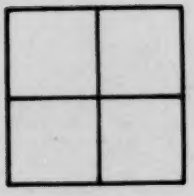
 = ____

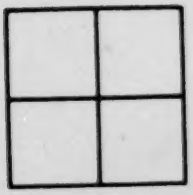
 = ____

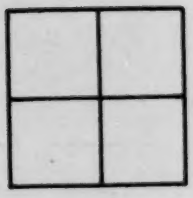
 = ____

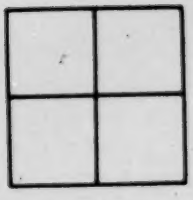
 = ____

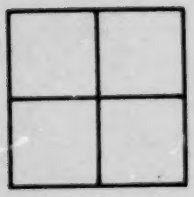
 = ____

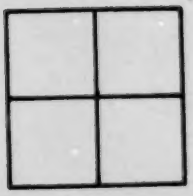
 = ____

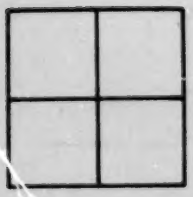
 = ____

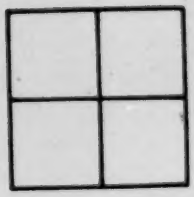
 = ____

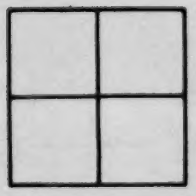
 = ____

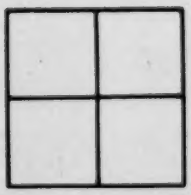
 = ____

 = ____

 = ____

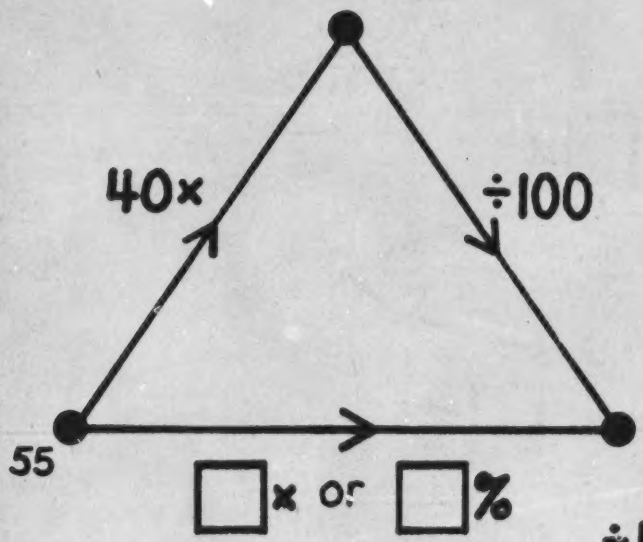
 = ____

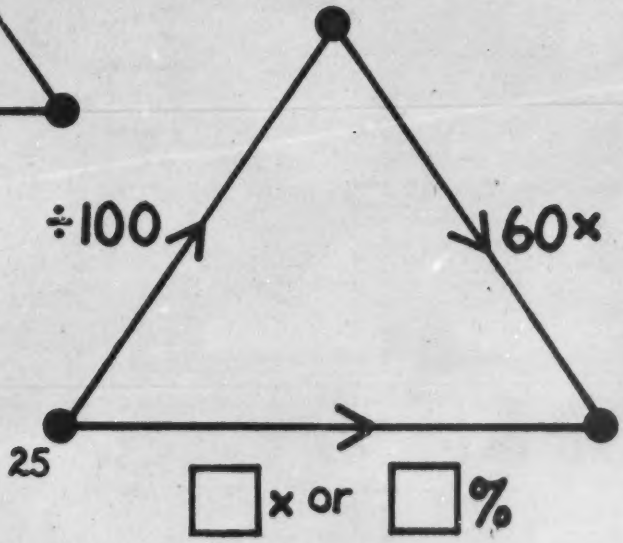
 = ____

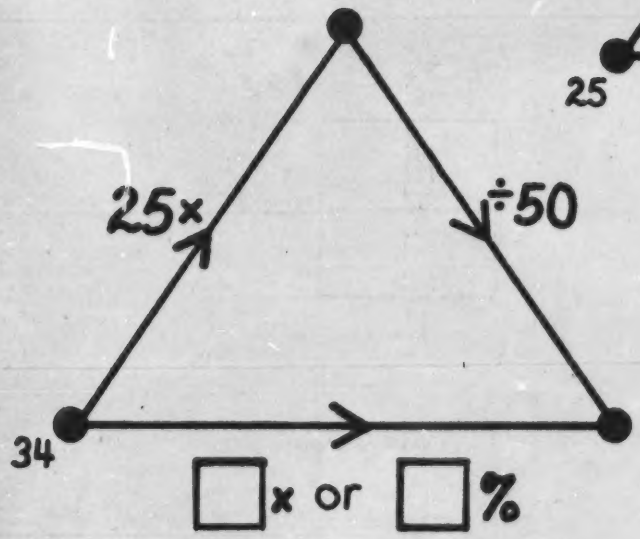
 = ____

Name _____ N 34 *

Label the dots and fill in the boxes for the arrows.

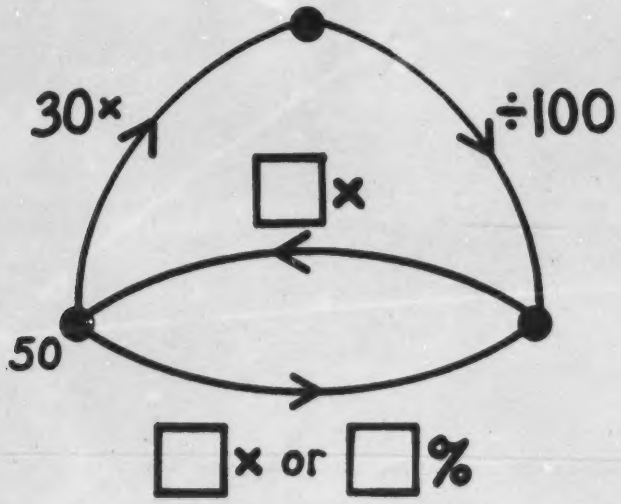


Name _____ N 35 **

Fill in the boxes for the arrows and label the dots.




Calculate. (Hint: Use the arrow picture above as an aid.)

30% of 50 = ____ 0.3 × 70 = ____

$\frac{3}{10}$ × 20 = ____ $\frac{10}{3}$ × 20 = ____

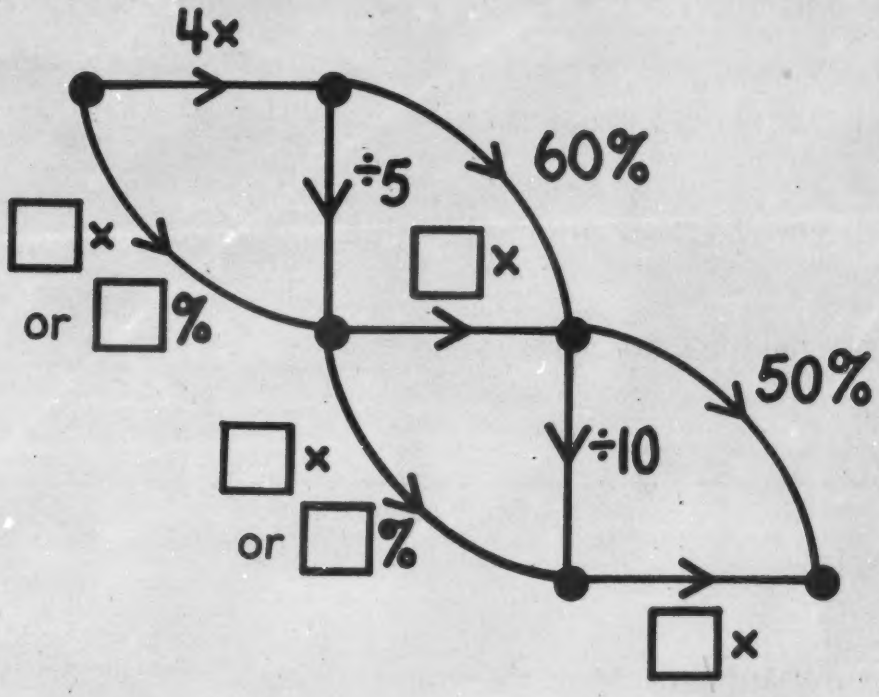
30% of 40 = ____

60% of 40 = ____

Name _____

N 36 ***

Fill in the boxes for the arrows.




Complete these number stories.

80% of 75 = □

60% of 75 = □

50% of 75 = □

30% of 75 = □

80% of □ = 24

60% of □ = 24

50% of □ = 24

30% of □ = 24

Name _____ N 37 ****

The Drama club is raising money to buy costumes; their goal is $400. The treasurer announces at the meeting that they now have 65% of the goal.

How much money has the Drama club raised? _____

How much money do they still need to raise? _____

What percent of the goal are they short? _____

---

One week later:

The treasurer announces that the Drama club now has raised $340.

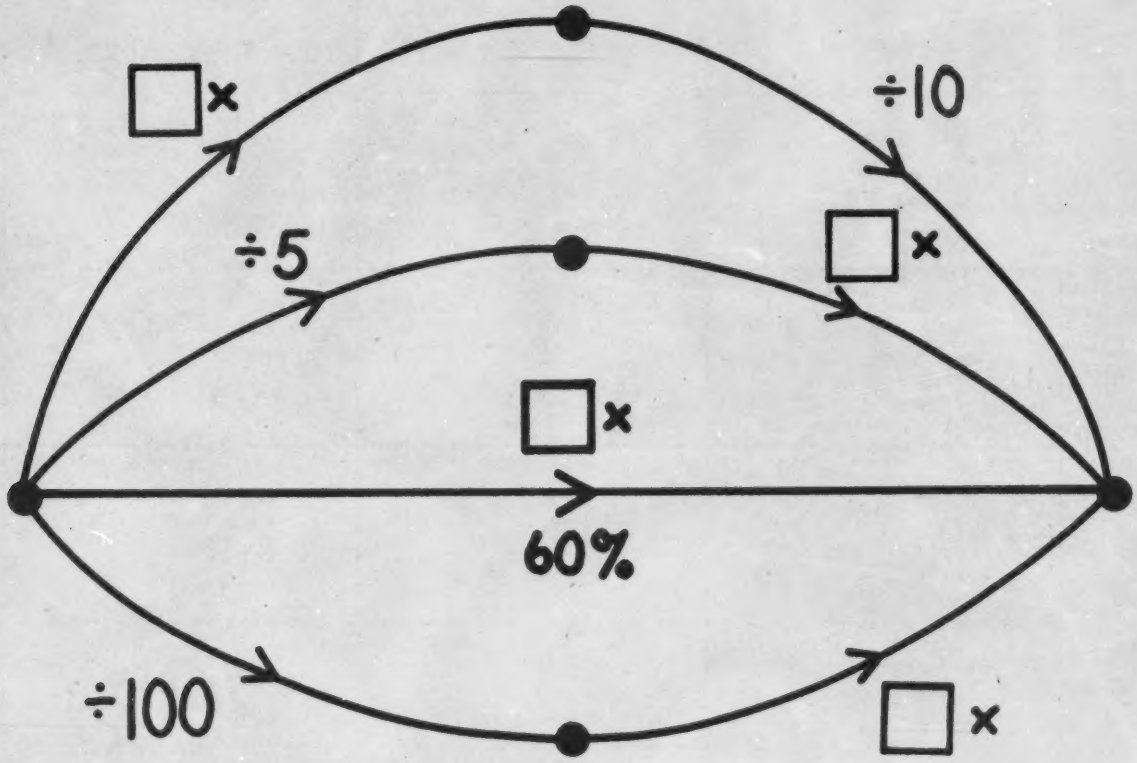
What percent of the goal does the Drama club have now? _____

What percent of the goal are they short? _____

Name _____

N 38 *

Fill in the boxes for the arrows.




Calculate. (Hint: Use the arrow picture above as an aid).

60% of 105 = ____ 20% of 105 = ____

30% of 105 = ____ 10% of 105 = ____

Name _____

N 39 **

Complete this table of Test Results for a 120 question true-false test.

| Student | Number Correct | % Correct |
|---|---|---|
| A | 96 | |
| B | | 65% |
| C | 102 | |
| D | | 90% |
| E | 66 | |

If 70% or better is a passing grade on this test, who passes? _____

How many questions must a person get correct to have a passing grade?

_____

Name _____

N 40 *

Write a fraction in each box to get a true number story.

$25\% = \square \times$

$12\frac{1}{2}\% = \square \times$

$6\frac{1}{4}\% = \square \times$

$50\% = \square \times$

$10\% = \square \times$

$20\% = \square \times$

$40\% = \square \times$

$5\% = \square \times$

$2\frac{1}{2}\% = \square \times$

$31\frac{1}{4}\% = \square \times$

$30\% = \square \times$

$150\% = \square \times$

Complete.

$\square\% = \frac{3}{5} \times$

$\square\% = \frac{4}{5} \times$

$\square\% = \frac{7}{10} \times$

$\square\% = \frac{3}{8} \times$

$\square\% = \frac{3}{20} \times$

$\square\% = \frac{7}{20} \times$

$\square\% = \frac{3}{4} \times$

$\square\% = \frac{5}{4} \times$

$\square\% = \frac{3}{2} \times$

$\square\% = 3 \times$

Name _____

N 41 **

**A**

Spring Sale!
25% off
all winter wear
Additional 10% off
on items originally
priced $50 or more

**B**

Spring Sale!
$\frac{1}{3}$ off
all winter
clothing
Make room for Spring!

**C**

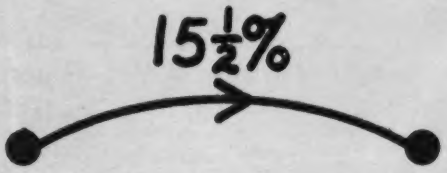
Spring Sale!
30% off
every winter
clothing item
in stock

Three nearby stores are having winter clearance sales. Some items are available at all three stores; some only at two of the three stores. Fill in this table to show where to pay the least amount for individual items.

| Item | Original Price | Available At | Best Discounted Price (at which store) | $5\frac{1}{4}$% Sales Tax | Best Total Cost |
|---|---|---|---|---|---|
| Sweater | $34.50 | A, B, & C | | | |
| Boots | $19.75 | A & C | | | |
| Coat | $78 | A, B, & C | | | |
| Jacket | $62 | A & B | | | |
| Suit | $210.90 | B & C | | | |

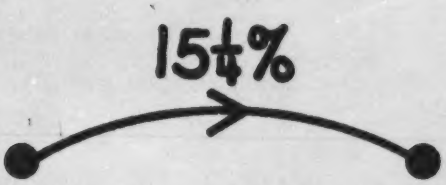
Name _____

N 42 ***




Tom has $36.50 and wants to buy an anniversary present for his parents. He considers a silver serving tray costing $32. However, Tom must remember that there is a $15\frac{1}{2}\%$ combined luxury and sales tax.
How much tax is there on the $32 silver tray? _____

Does Tom have enough money to buy the silver tray? _____
If yes, how much change would he receive? _____
If no, how much more money does he need? _____




Tom also considers a large Gardenia plant costing $34. On the plant there is only a $5\frac{1}{4}\%$ sales tax.
How much tax is there on the Gardenia plant? _____

Does Tom have enough money to buy the Gardenia plant? _____
If yes, how much change would he receive? _____
If no, how much more money does he need? _____

Name _____ **N 43** ****

1. The Midland Savings & Loan company pays $6\frac{1}{3}$ % yearly interest on regular savings. How much interest would be earned in one year by a savings deposit of $1,125? _____

2. The Midland Savings & Loan company charges $1\frac{3}{8}$ % monthly interest on loans. How much interest would a customer pay monthly on a loan of $1,000? _____
   What equivalent yearly rate of interest is the customer paying? _____

TIRE SALE!
All prices
reduced 15%

3. Joyce saved $12 by buying two tires at the tire sale. What was the original price of the two tires? _____
   How much did Joyce pay for the tires? _____

4. You can buy a set of luggage for $160 cash. If you buy it on the installment plan, you must make 12 monthly payments of $15.25 each. What is the total cost to buy the luggage on the installment plan? _____
   What percent over the cash price is the installment plan price? _____

Name _____ N 44 *

Fill in the boxes.

$\frac{5}{10} = \square$ $0.8 = \square$

$1.6 = \square$ $\frac{26}{100} = \square$

$\frac{235}{100} = \square$

---

Calculate.

$1.6 \times 0.8 =$ _____

$2.35 \times 0.5 =$ _____

$0.26 \times 0.8 =$ _____

Name _____

N 45 **

All of these calculations are correct, except that a decimal point is missing in the answer.

Place a decimal point in each answer to get a true number story.

$1.26 \times 0.3 = 378$

$0.09 \times 15.64 = 14076$

$16.5 \times 33 = 5445$

$5.78 \times 0.692 = 399976$

$1.11 \times 1.1 = 1221$

$1{,}780 \times 4.2 = 7476$

$$\begin{array}{r} 5.2 \\ \times\ 4.6 \\ \hline 2392 \end{array}$$

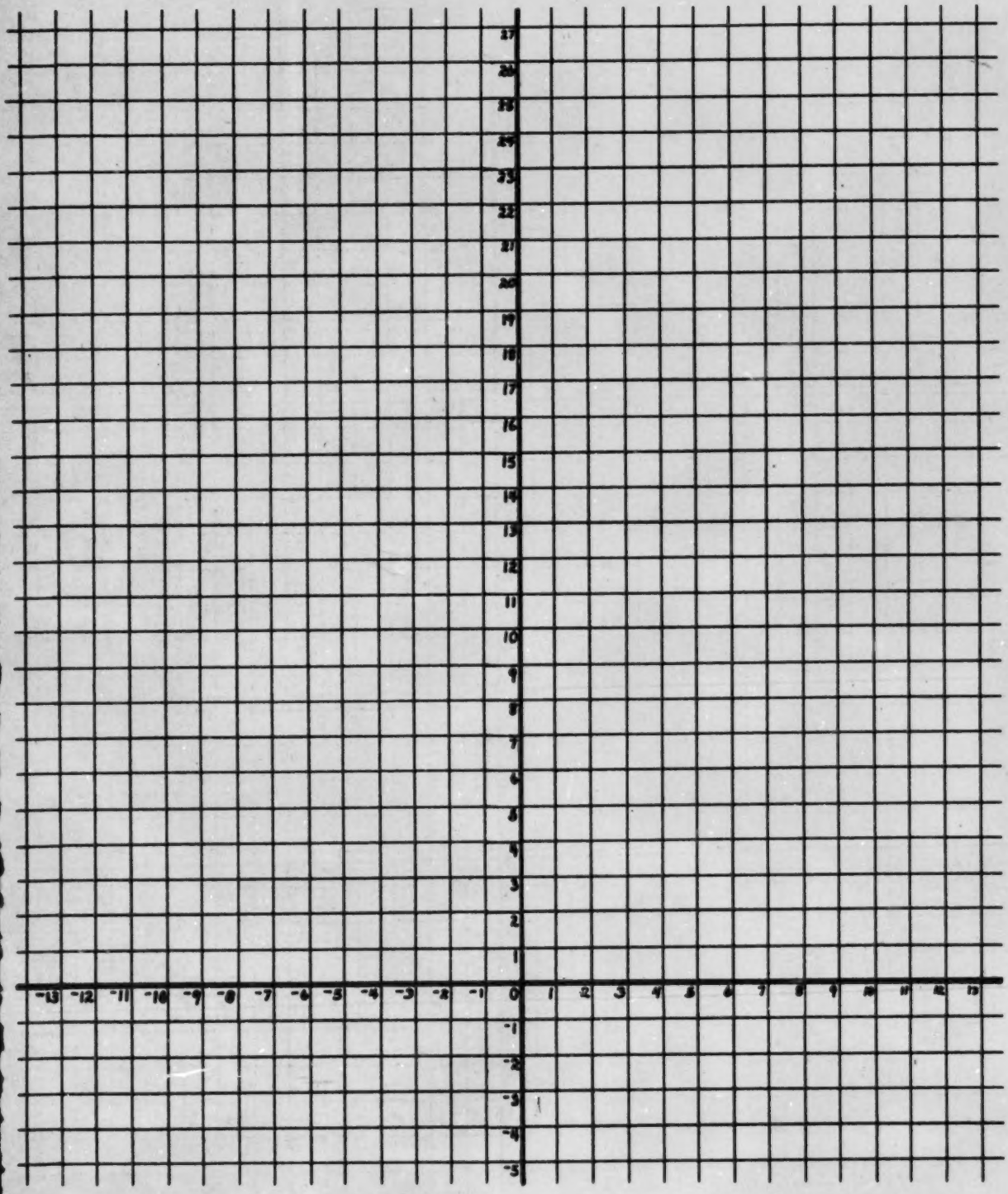
$$\begin{array}{r} 3.68 \\ \times\ 0.104 \\ \hline 38272 \end{array}$$

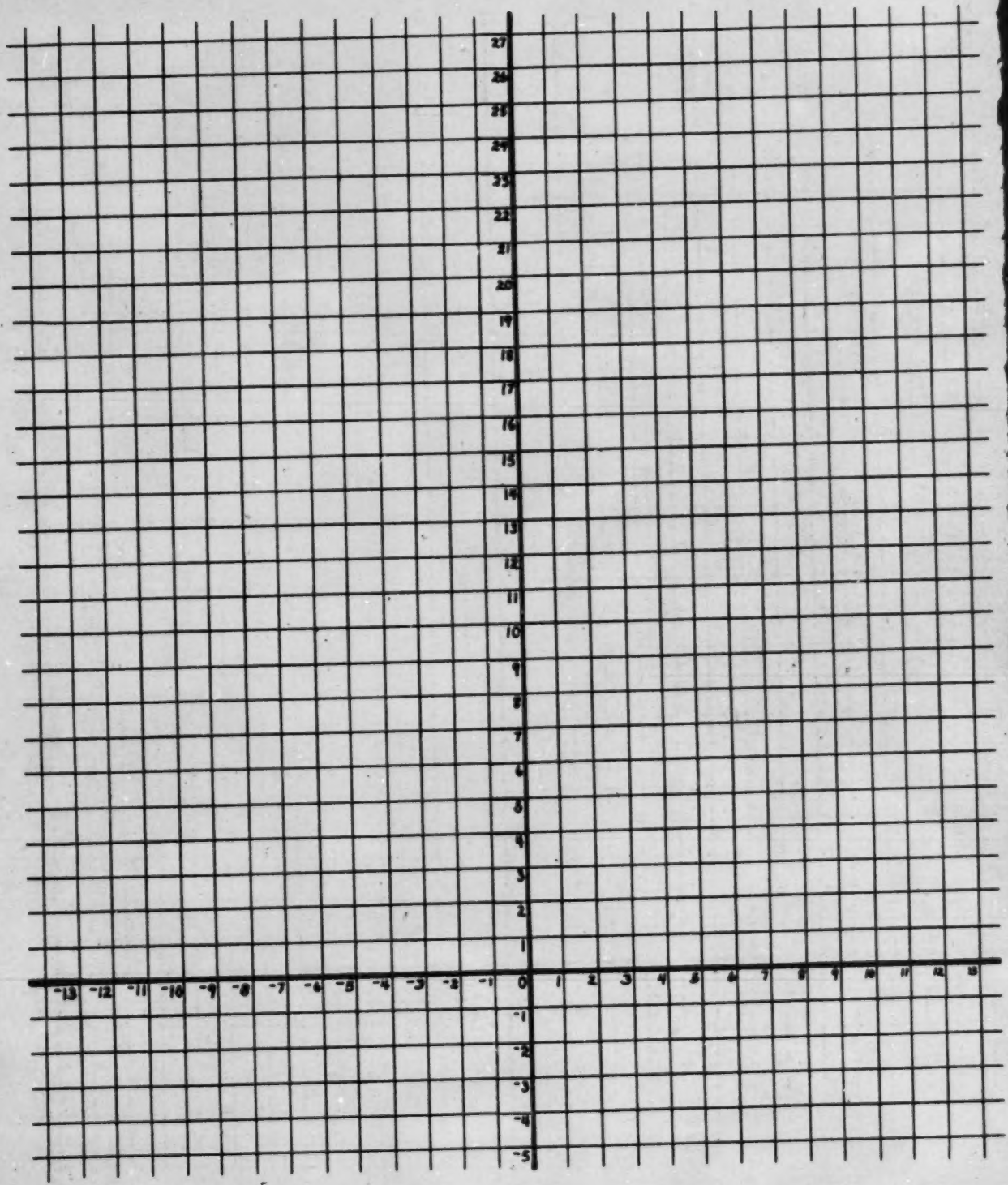
$$\begin{array}{r} 2.485 \\ \times 0.38 \\ \hline 9443 \end{array}$$

$$\begin{array}{r} 25.6389 \\ \times\ 0.012 \\ \hline 3076668 \end{array}$$

Name _____

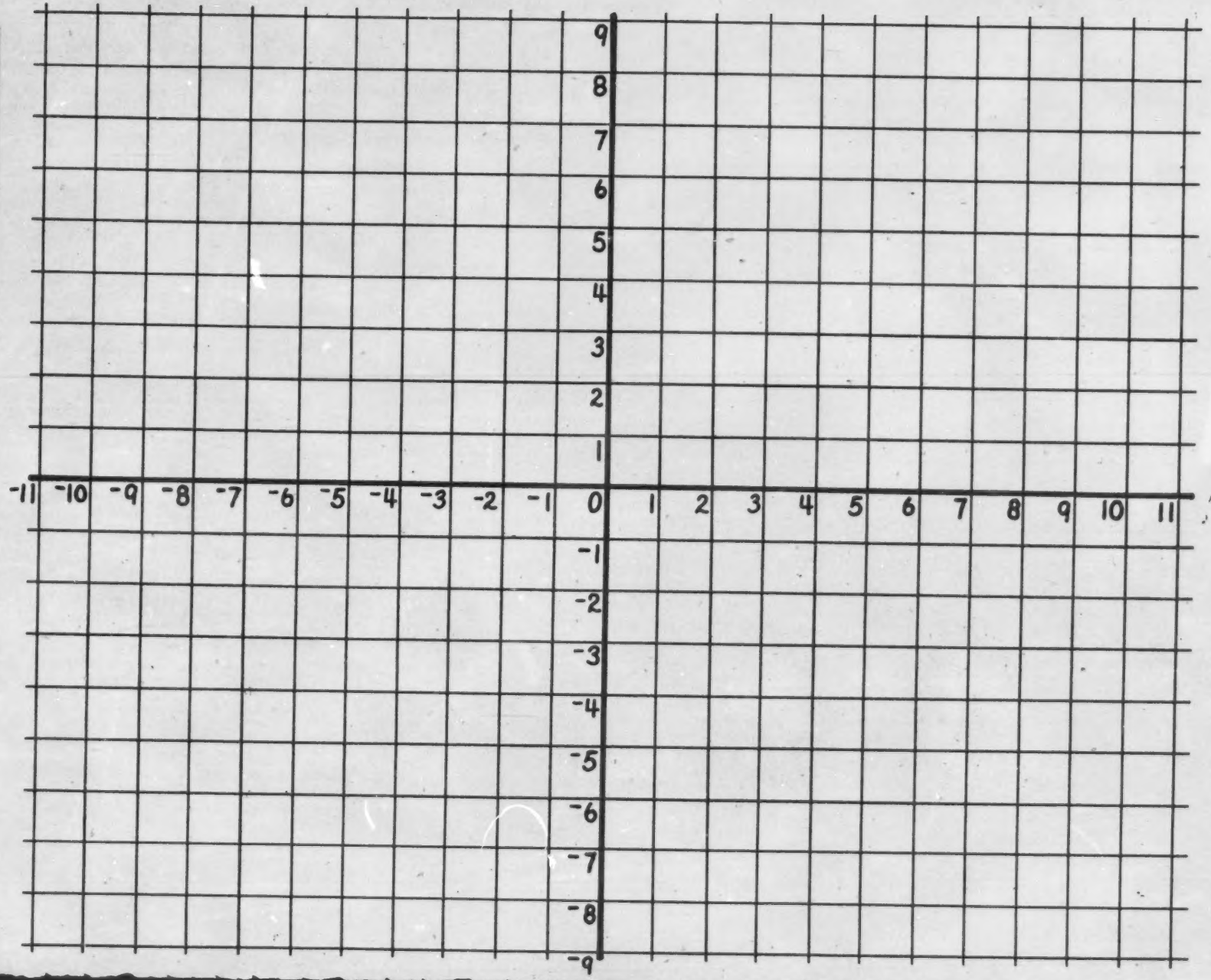
**N 46**



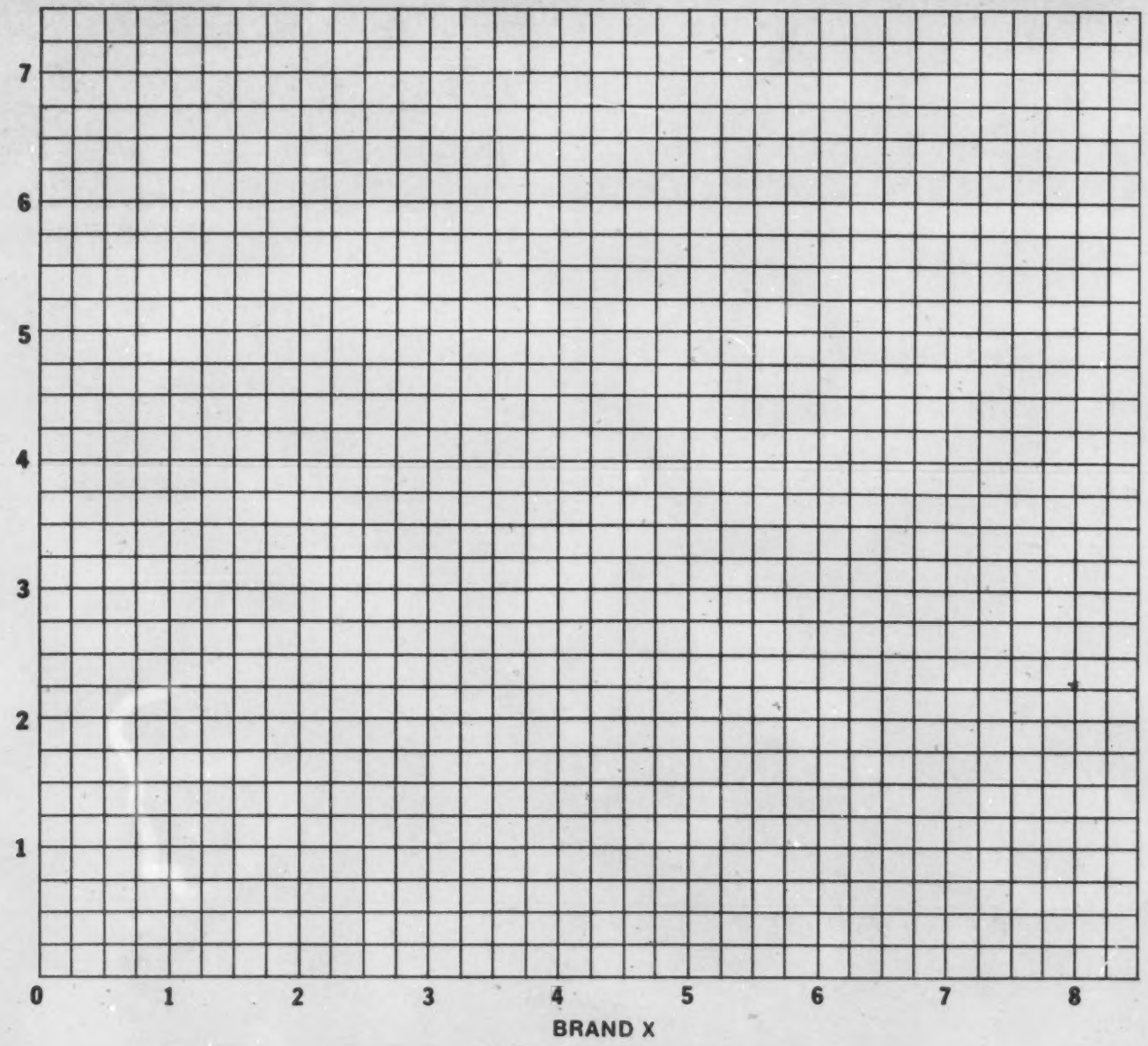

-13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13
27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0 -1 -2 -3 -4 -5

N 47

Name




55




Name _____

N 48

Name _____

L 01 *

Each table is for one of these:

THE TABLE GAME

| | | | |
|---|---|---|---|
| + | $+_3$ | $+_5$ | $+_{10}$ |
| − | $-_3$ | $-_5$ | $-_{10}$ |
| x | $x_3$ | $x_5$ | $x_{10}$ |
| ↑ | ↓ | ⊓ | ⊔ |
| $T_D$ | $T_M$ | $T_<$ | $T_>$ |
| | $T_{-2}$ | $T_{-4}$ | |

Label the tables.

| | 1 | 4 |
|---|---|---|
| 2 | 0 | 0 |
| 5 | 0 | 0 |

| | 6 | 4 |
|---|---|---|
| 2 | 1 | 1 |
| 8 | 1 | 1 |

| | 3 | 1 |
|---|---|---|
| 7 | 4 | 6 |
| 2 | ~~1~~ | 1 |

| | 4 | 8 |
|---|---|---|
| 1 | 4 | 3 |
| 2 | 3 | 1 |

Name _____

**L 02** **

Each table is for one of these:

**THE TABLE GAME**

| | | | |
|---|---|---|---|
| $+$ | $+_3$ | $+_5$ | $+_{10}$ |
| $-$ | $-_3$ | $-_5$ | $-_{10}$ |
| $\times$ | $\times_3$ | $\times_5$ | $\times_{10}$ |
| $\uparrow$ | $\downarrow$ | $\sqcap$ | $\sqcup$ |
| $T_D$ | $T_M$ | $T_<$ | $T_>$ |
| | $T_{-2}$ | $T_{-4}$ | |

Label the tables.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 2 | | 1 | | | | | | | |
| 3 | | | 1 | | | | | | |
| 4 | | | | 1 | | | | | |
| 5 | | | | | 1 | | | | |
| 6 | | | | | | 1 | | | |
| 7 | | | | | | | 1 | | |
| 8 | | | | | | | | 1 | |
| 9 | | | | | | | | | 1 |

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | X | | | | | | | | 0 |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |
| 8 | | | | | | | | | |
| 9 | 0 | | | | | | | | |

Name _____

**L 03** ***

* is one of the operations in the Table Game.

THE TABLE GAME

| | | | |
|---|---|---|---|
| + | $+_3$ | $+_5$ | $+_n$ |
| − | $-_3$ | $-_5$ | $-_n$ |
| x | $x_3$ | $x_5$ | $x_n$ |
| ↑ | ↓ | ⊓ | ⊔ |
| $T_D$ | $T_M$ | $T_<$ | $T_>$ |
| | $T_{-3}$ | $T_{-4}$ | |

**First clue**

This table for * has exactly three 0's in it.

| * | 4 | 8 |
|---|---|---|
| 8 | | |
| 4 | | |

* could be _____.

**Second clue**

This table for * has exactly three 1's in it.

| * | 6 | 9 |
|---|---|---|
| 5 | | |
| 7 | | |

* is _____.

Name _____

L 04 ****

* is one of the operations in the Table Game.

THE TABLE GAME

| | | | |
|---|---|---|---|
| + | $+_2$ | $+_3$ | $+_6$ |
| − | $-_2$ | $-_3$ | $-_6$ |
| x | $x_2$ | $x_3$ | $x_6$ |
| ↑ | ↓ | ⊓ | ⊔ |
| $T_D$ | $T_M$ | $T_<$ | $T_>$ |
| | $T_{-2}$ | $T_{-4}$ | |

First clue

No two entries in this table for * are the same.

| * | 3 | 4 |
|---|---|---|
| 2 | | |
| 3 | | |

* could be _____, _____, _____, or _____.

Second clue

All four entries in this table for * are the same.

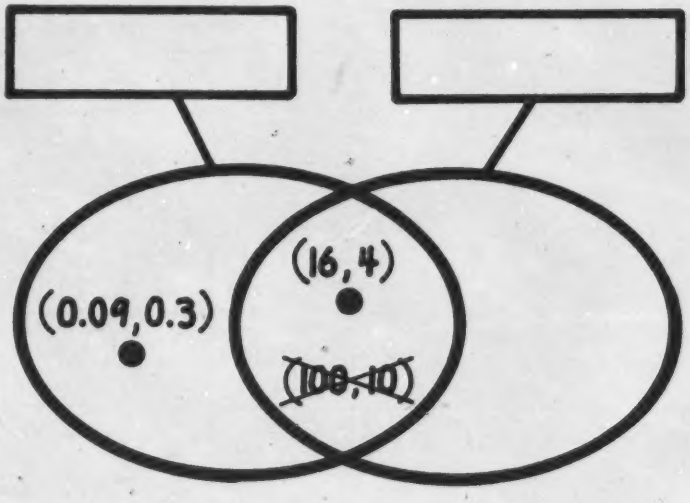
| * | 2 | 6 |
|---|---|---|
| 6 | | |
| 3 | | |

* is _____.

Name _____ **L 05** *

Use the clues in the picture to cross out labels the strings cannot have.
Then label the strings.

| | RED | BLUE |
|---|---|---|
| is larger than | | |
| is smaller than | | |
| is at least 20 smaller than | | |
| is at least 20 larger than | | |
| is a multiple of | | |
| is a positive divisor of | | |
| is the square of | | |
| 10× | | |
| ÷10 | | |
| 2× | | |
| ÷2 | | |
| $\frac{2}{3}$× | | |
| $\frac{3}{2}$× | | |
| + = ••• | | |
| + 2 = ••• | | |
| − 2 = ••• | | |
| + 3 = ••• | | |
| − 3 = ••• | | |
| + 4 = ••• | | |
| − 4 = ••• | | |
| + 5 = ••• | | |
| − 5 = ••• | | |

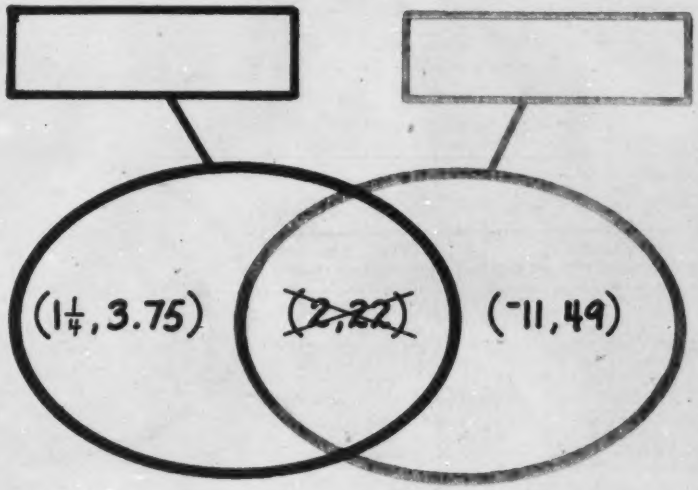


Name _____

**L 06** **

Use the clues in the picture to cross out labels the strings cannot have.
Then label the strings.

| | RED | BLUE |
|---|---|---|
| is larger than | | |
| is smaller than | | |
| is at least 20 smaller than | | |
| is at least 20 larger than | | |
| is a multiple of | | |
| is a positive divisor of | | |
| is the square of | | |
| 10× | | |
| ÷10 | | |
| 2× | | |
| ÷2 | | |
| $\frac{2}{3}$× | | |
| $\frac{3}{2}$× | | |
| [+] [=] ••• | | |
| [+] [2] [=] ••• | | |
| [−] [2] [=] ••• | | |
| [+] [3] [=] ••• | | |
| [−] [3] [=] ••• | | |
| [+] [4] [=] ••• | | |
| [−] [4] [=] ••• | | |
| [+] [5] [=] ••• | | |
| [−] [5] [=] ••• | | |

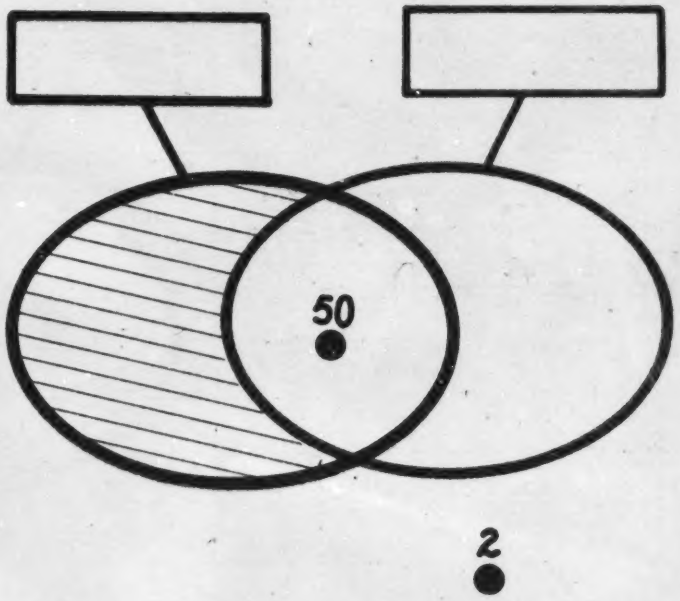


Name _____

**L 07** *

Use the clues in the picture to cross out labels the strings cannot have.
The two strings have different labels. Label the strings.

| RED | BLUE |
|---|---|
| MULTIPLES OF 2 | MULTIPLES OF 2 |
| MULTIPLES OF 3 | MULTIPLES OF 3 |
| MULTIPLES OF 4 | MULTIPLES OF 4 |
| MULTIPLES OF 5 | MULTIPLES OF 5 |
| MULTIPLES OF 10 | MULTIPLES OF 10 |
| ODD NUMBERS | ODD NUMBERS |
| POSITIVE PRIME NUMBERS | POSITIVE PRIME NUMBERS |
| LARGER THAN 50 | LARGER THAN 50 |
| SMALLER THAN 50 | SMALLER THAN 50 |
| LARGER THAN $^{-}10$ | LARGER THAN $^{-}10$ |
| SMALLER THAN $^{-}10$ | SMALLER THAN $^{-}10$ |
| POSITIVE DIVISORS OF 12 | POSITIVE DIVISORS OF 12 |
| POSITIVE DIVISORS OF 18 | POSITIVE DIVISORS OF 18 |
| POSITIVE DIVISORS OF 20 | POSITIVE DIVISORS OF 20 |
| POSITIVE DIVISORS OF 24 | POSITIVE DIVISORS OF 24 |
| POSITIVE DIVISORS OF 27 | POSITIVE DIVISORS OF 27 |

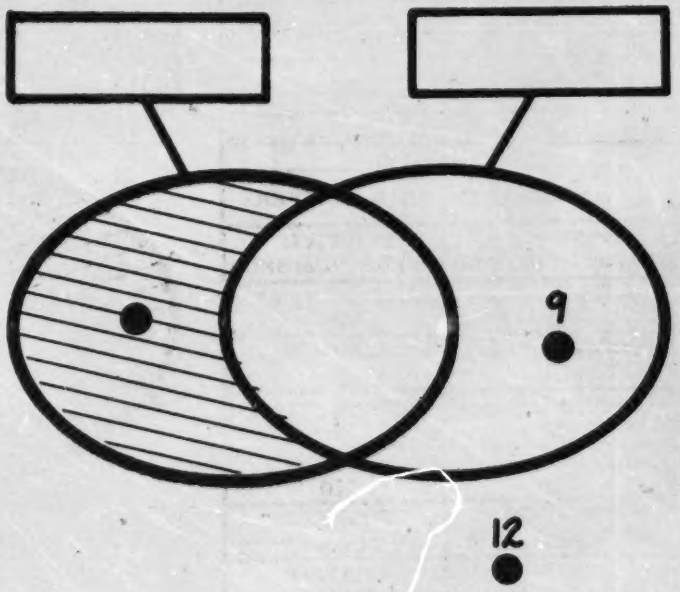


Name _____

**L 08** **

Use the clues in the picture to cross out labels the strings cannot have. Then label the strings.

| RED | BLUE |
|---|---|
| MULTIPLES OF 2 | MULTIPLES OF 2 |
| MULTIPLES OF 3 | MULTIPLES OF 3 |
| MULTIPLES OF 4 | MULTIPLES OF 4 |
| MULTIPLES OF 5 | MULTIPLES OF 5 |
| MULTIPLES OF 10 | MULTIPLES OF 10 |
| ODD NUMBERS | ODD NUMBERS |
| POSITIVE PRIME NUMBERS | POSITIVE PRIME NUMBERS |
| LARGER THAN 50 | LARGER THAN 50 |
| SMALLER THAN 50 | SMALLER THAN 50 |
| LARGER THAN $^{-}10$ | LARGER THAN $^{-}10$ |
| SMALLER THAN $^{-}10$ | SMALLER THAN $^{-}10$ |
| POSITIVE DIVISORS OF 12 | POSITIVE DIVISORS OF 12 |
| POSITIVE DIVISORS OF 18 | POSITIVE DIVISORS OF 18 |
| POSITIVE DIVISORS OF 20 | POSITIVE DIVISORS OF 20 |
| POSITIVE DIVISORS OF 24 | POSITIVE DIVISORS OF 24 |
| POSITIVE DIVISORS OF 27 | POSITIVE DIVISORS OF 27 |

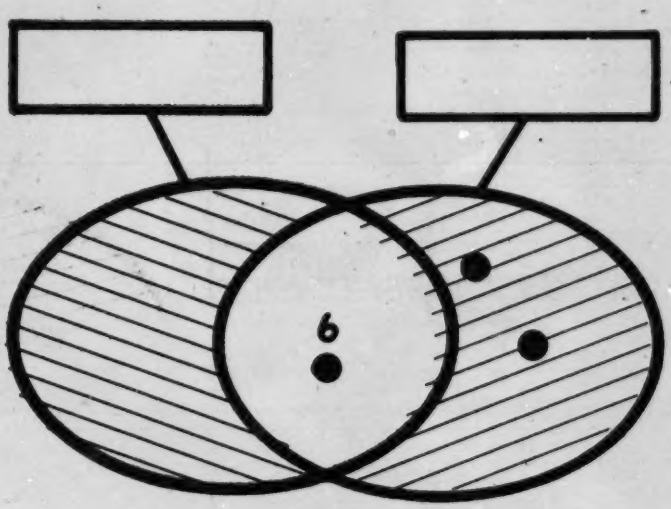


Name _____

L 09 *

Use the clues in the picture to cross out labels the strings cannot have.
Then label the strings.

| RED | BLUE |
|---|---|
| MULTIPLES OF 2 | MULTIPLES OF 2 |
| MULTIPLES OF 3 | MULTIPLES OF 3 |
| MULTIPLES OF 4 | MULTIPLES OF 4 |
| MULTIPLES OF 5 | MULTIPLES OF 5 |
| MULTIPLES OF 10 | MULTIPLES OF 10 |
| ODD NUMBERS | ODD NUMBERS |
| POSITIVE PRIME NUMBERS | POSITIVE PRIME NUMBERS |
| LARGER THAN 50 | LARGER THAN 50 |
| SMALLER THAN 50 | SMALLER THAN 50 |
| LARGER THAN -10 | LARGER THAN -10 |
| SMALLER THAN -10 | SMALLER THAN -10 |
| POSITIVE DIVISORS OF 12 | POSITIVE DIVISORS OF 12 |
| POSITIVE DIVISORS OF 18 | POSITIVE DIVISORS OF 18 |
| POSITIVE DIVISORS OF 20 | POSITIVE DIVISORS OF 20 |
| POSITIVE DIVISORS OF 24 | POSITIVE DIVISORS OF 24 |
| POSITIVE DIVISORS OF 27 | POSITIVE DIVISORS OF 27 |

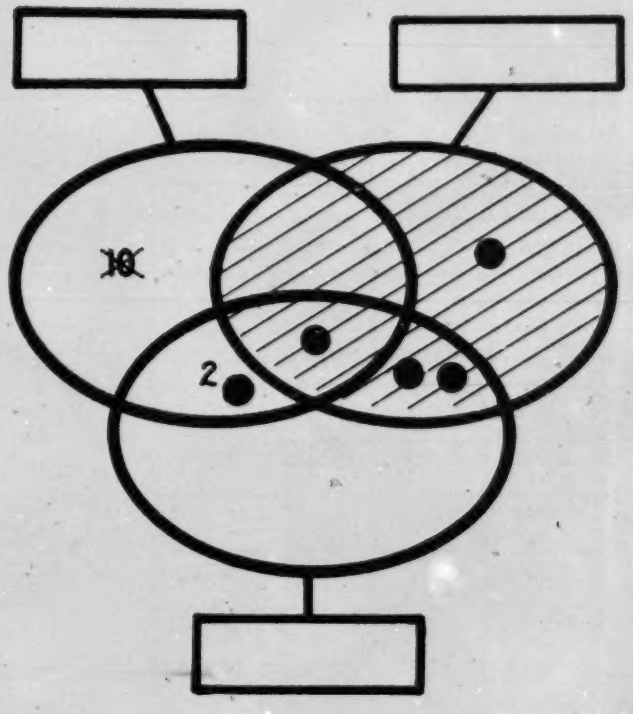


Name _____

**L 10** **

Use the clues in the picture to cross out labels the strings cannot have. Then label the strings.

| RED | BLUE | BLACK |
|---|---|---|
| MULTIPLES OF 2 | MULTIPLES OF 2 | MULTIPLES OF 2 |
| MULTIPLES OF 3 | MULTIPLES OF 3 | MULTIPLES OF 3 |
| MULTIPLES OF 4 | MULTIPLES OF 4 | MULTIPLES OF 4 |
| MULTIPLES OF 5 | MULTIPLES OF 5 | MULTIPLES OF 5 |
| MULTIPLES OF 10 | MULTIPLES OF 10 | MULTIPLES OF 10 |
| ODD NUMBERS | ODD NUMBERS | ODD NUMBERS |
| POSITIVE PRIME NUMBERS | POSITIVE PRIME NUMBERS | POSITIVE PRIME NUMBERS |
| LARGER THAN 50 | LARGER THAN 50 | LARGER THAN 50 |
| SMALLER THAN 50 | SMALLER THAN 50 | SMALLER THAN 50 |
| LARGER THAN -10 | LARGER THAN -10 | LARGER THAN -10 |
| SMALLER THAN -10 | SMALLER THAN -10 | SMALLER THAN -10 |
| POSITIVE DIVISORS OF 12 | POSITIVE DIVISORS OF 12 | POSITIVE DIVISORS OF 12 |
| POSITIVE DIVISORS OF 18 | POSITIVE DIVISORS OF 18 | POSITIVE DIVISORS OF 18 |
| POSITIVE DIVISORS OF 20 | POSITIVE DIVISORS OF 20 | POSITIVE DIVISORS OF 20 |
| POSITIVE DIVISORS OF 24 | POSITIVE DIVISORS OF 24 | POSITIVE DIVISORS OF 24 |
| POSITIVE DIVISORS OF 27 | POSITIVE DIVISORS OF 27 | POSITIVE DIVISORS OF 27 |



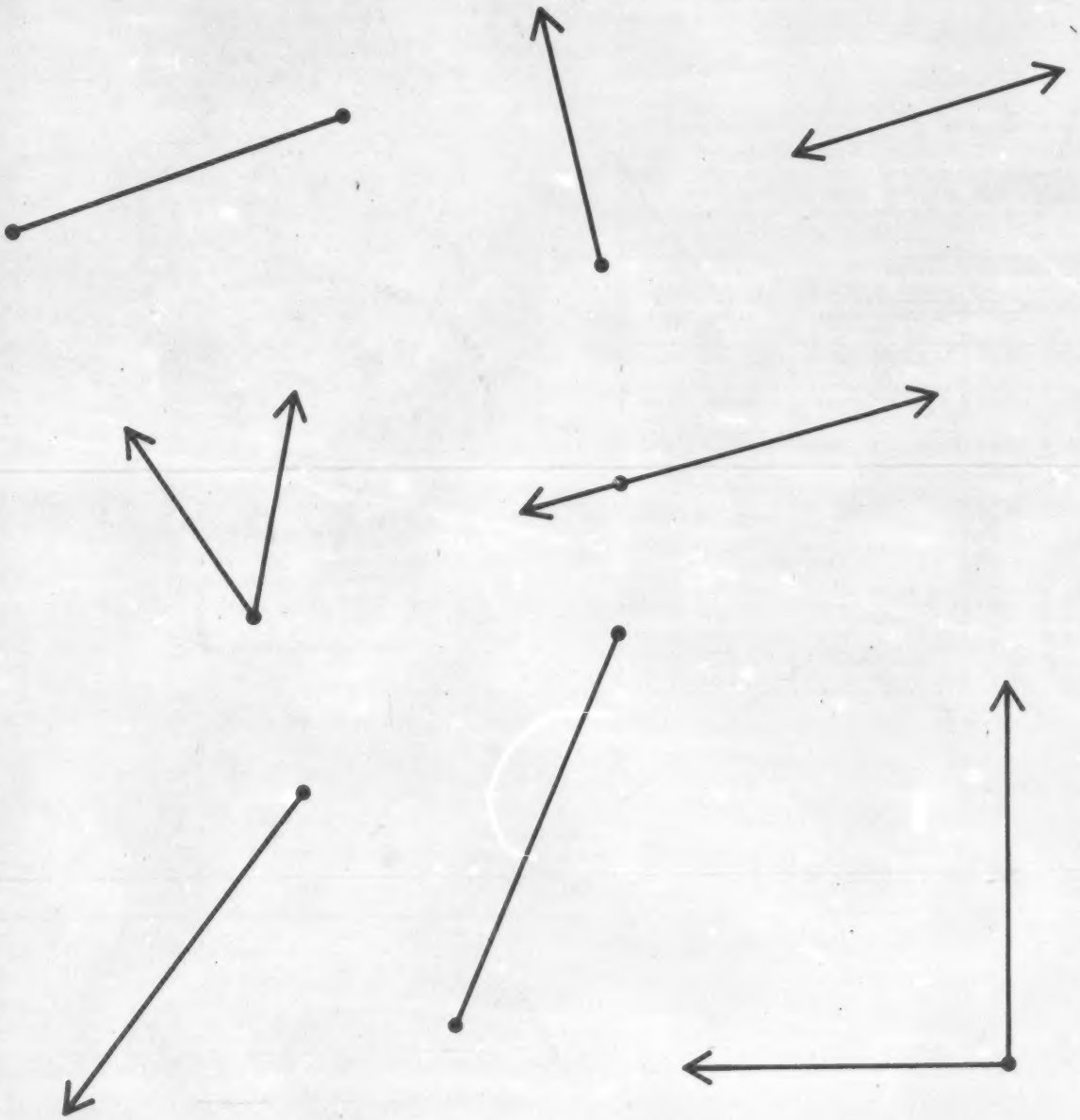

Hint: How many numbers belong in the blue string?

Name _____

**G 01**

Identify as many of each of the following as you can find:

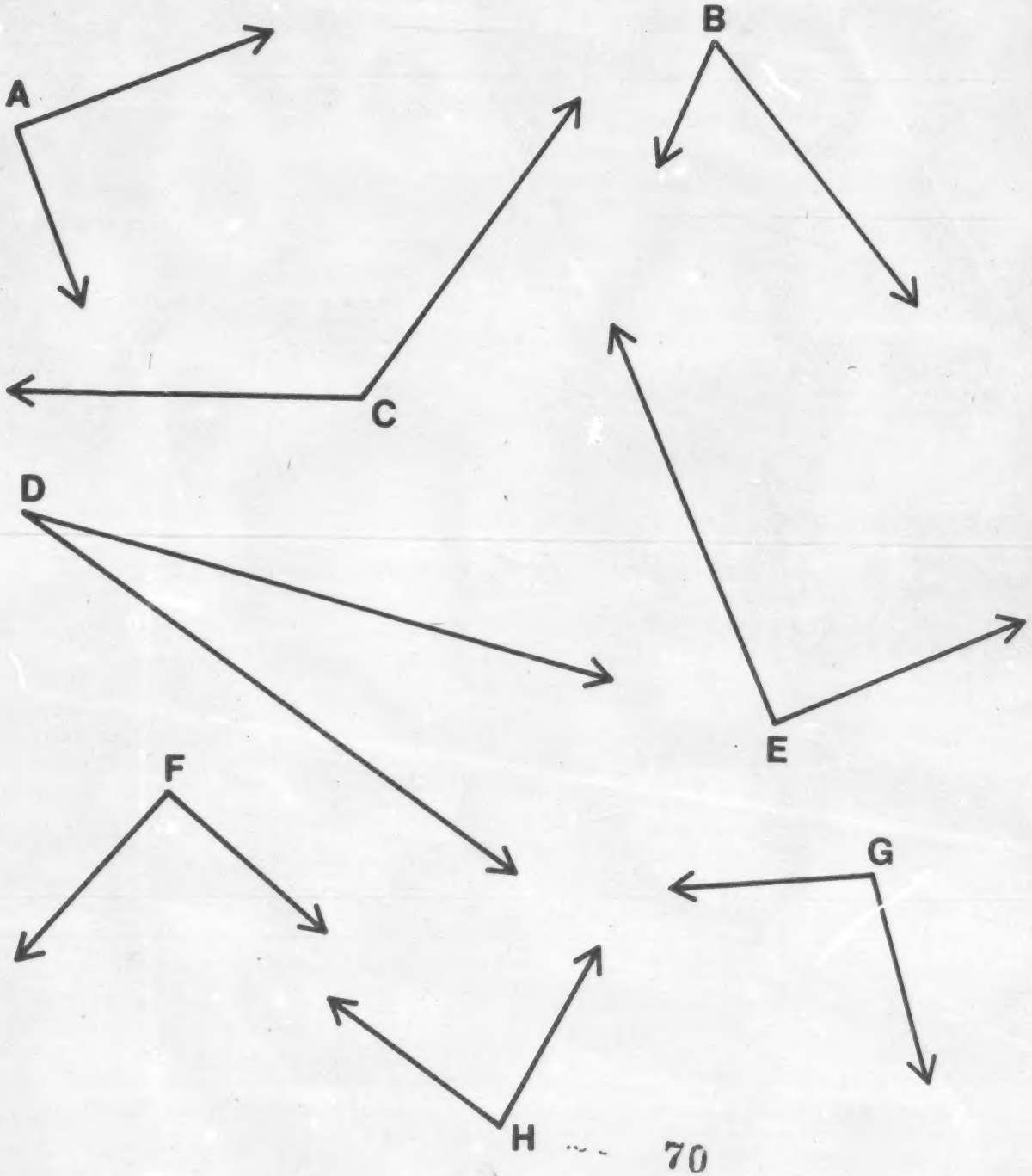
Line, Line Segment, Ray, Vertex, Angle



Name _____

**G 02**

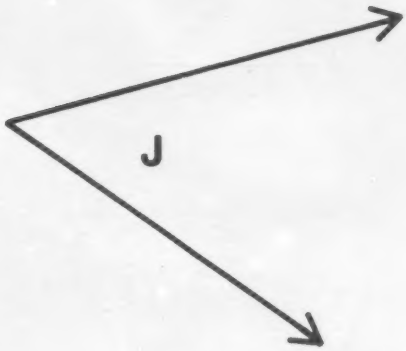
Which of these angles are RIGHT ANGLES ?

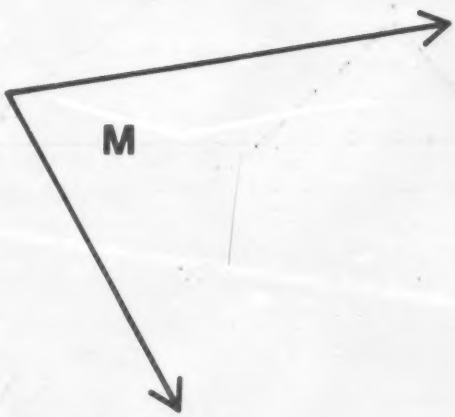


Name _____

**G 03**

Draw as many different four-sided shapes as you can using these four angles.
An angle equal to each of J, K, L, and M must be part of each shape.
Work neatly; use a straightedge to draw the sides of your shapes.
Label the angles of your shapes: **J**, **K**, **L**, or **M**.



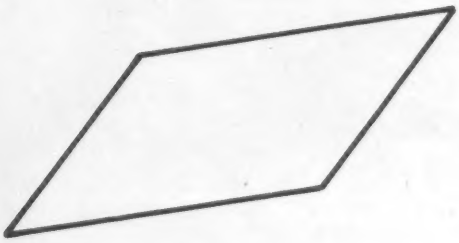


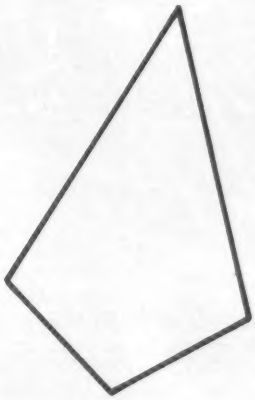
Name _____

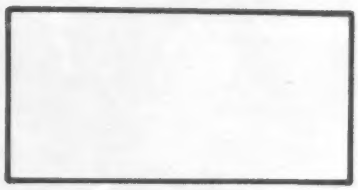
**G 04**

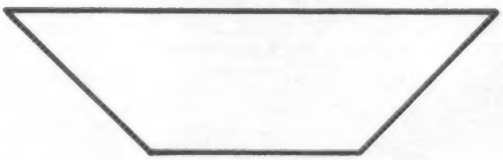
For each quadrilateral, check all pairs of angles and indicate the supplementary pairs. One is done for you.

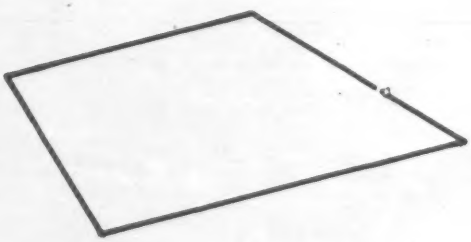
X and Y are supplementary

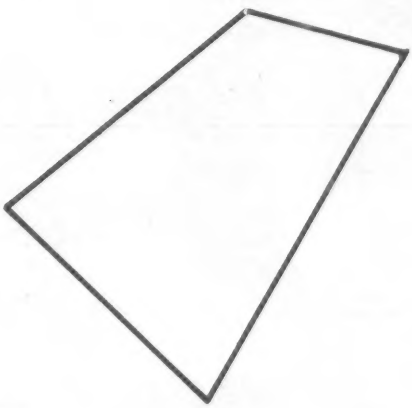








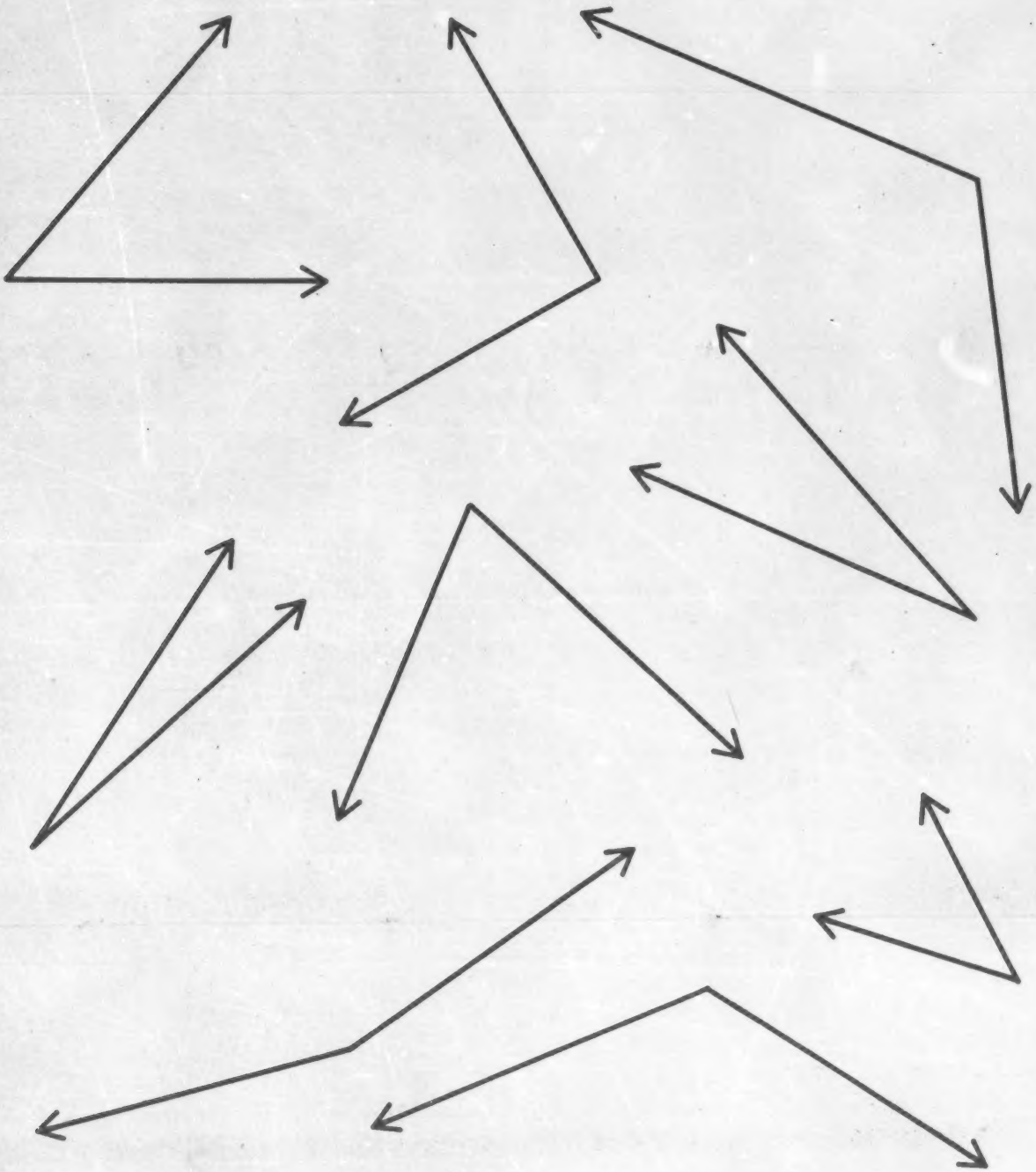




Name _____

**G 05**

Use a protractor to measure these angles.



Name _____ G 06

Use a straightedge and a protractor to construct angles with the given measures.

30°

45°

85°

115°

60°

167°

22°

90°

75°

Name _____ **P 01**

Group: _____ Problem #1

Teacher selects the _____ cube.

Student selects the _____ cube.

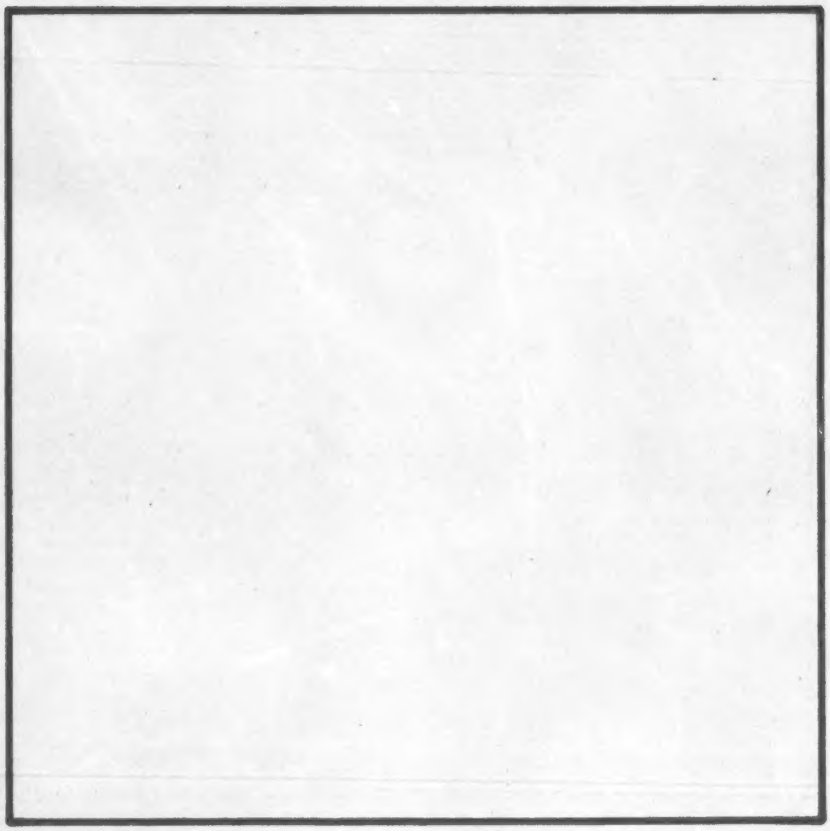
Answer: p(_____, _____) = _____

Name _____ **P 02**

Group: _____ Problem #2

Teacher selects the _____ cube.

Student selects the _____ cube.



Answer: p(_____, _____) = _____

Name _____

**P 03**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 10 | 55 | 220 | 715 | 2,002 | 5,005 | 11,440 | 24,310 | 48,620 |
| 1 | 9 | 45 | 165 | 495 | 1,287 | 3,003 | 6,435 | 12,870 | 24,310 |
| 1 | 8 | 36 | 120 | 330 | 792 | 1,716 | 3,432 | 6,435 | 11,440 |
| 1 | 7 | 28 | 84 | 210 | 462 | 924 | 1,716 | 3,003 | 5,005 |
| 1 | 6 | 21 | 56 | 126 | 252 | 462 | 792 | 1,287 | 2,002 |
| 1 | 5 | 15 | 35 | 70 | 126 | 210 | 330 | 495 | 715 |
| 1 | 4 | 10 | 20 | 35 | 56 | 84 | 120 | 165 | 220 |
| 1 | 3 | 6 | 10 | 15 | 21 | 28 | 36 | 45 | 55 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

NORTH ↑

NABU

EAST →

Name _____ **P04** *

1. Find the probability that a family with eight children has exactly six girls and two boys. _____

2. Find the probability that a family with eight children has exactly six boys and two girls. _____

3. Find the probability that a family with eight children has <u>at least</u> seven girls. _____

4. Find the probability that a family with eight children has <u>more</u> boys than girls. _____

Name _____ **P05** **

Use the available space to show your work.

1. Bernie forgot to read a chapter in his history book and his history teacher gave a surprise test the next day. The test had ten true-false questions. Bernie simply guessed at each answer. Find the probability that Bernie scored at least 75% on the test. _____

2. Sarah took the same history test with ten true-false questions. She knew the right answer for five of the questions, but had to guess on the other five questions. Find the probability that Sarah scored at least 75% on the test. _____

Name _____

**P06** ***

After complaining loudly about a math assignment, Fred was told by his math teacher to write "I LOVE MATH" 250 times.

Fred, being clever, wrote the following:

Did Fred complete his assignment? _____ Explain. _____

_____

_____

(Hint: How many different ways can "I LOVE MATH" be spelled using the picture ?)

Name _____ P07 *

Complete.

33 ® 5 = _____ 16,837 ® 10 = _____

33 ® 8 = _____ 16,837 ® 100 = _____

82 ® 10 = _____ 16,837 ® 1,000 = _____

637 ® 10 = _____ 5.862 ® 1 = _____

73.27 ® 1 = _____ 5.862 ® 0.1 = _____

58.18 ® 0.1 = _____ 5.862 ® 0.01 = _____

Name _____ P08 **

Fill in the boxes.

| Country or City | Population | Annual Population Growth Rate per 1,000 People | Net Population Gain - One Year |
|---|---|---|---|
| Hondo, Texas | 5,000 | 9.8 | |
| Harrisburg, Pennsylvania | 79,697 | -14.7 | |
| Honolulu, Hawaii | 705,381 | 23.7 | |
| New York, New York | 7,895,563 | -10.5 | |
| Sunnyside, Oregon | 6,208 | | 54 |
| Bogulusa, Louisiana | 21,823 | | -301 |

A city with a population of 32,000 on January 1, 1978 has a population growth rate per 1,000 people of 13.6 in 1978 and 12.9 in 1979. What is that city's population on December 31, 1978?_____

. . . on December 31, 1979?_____

Name _____

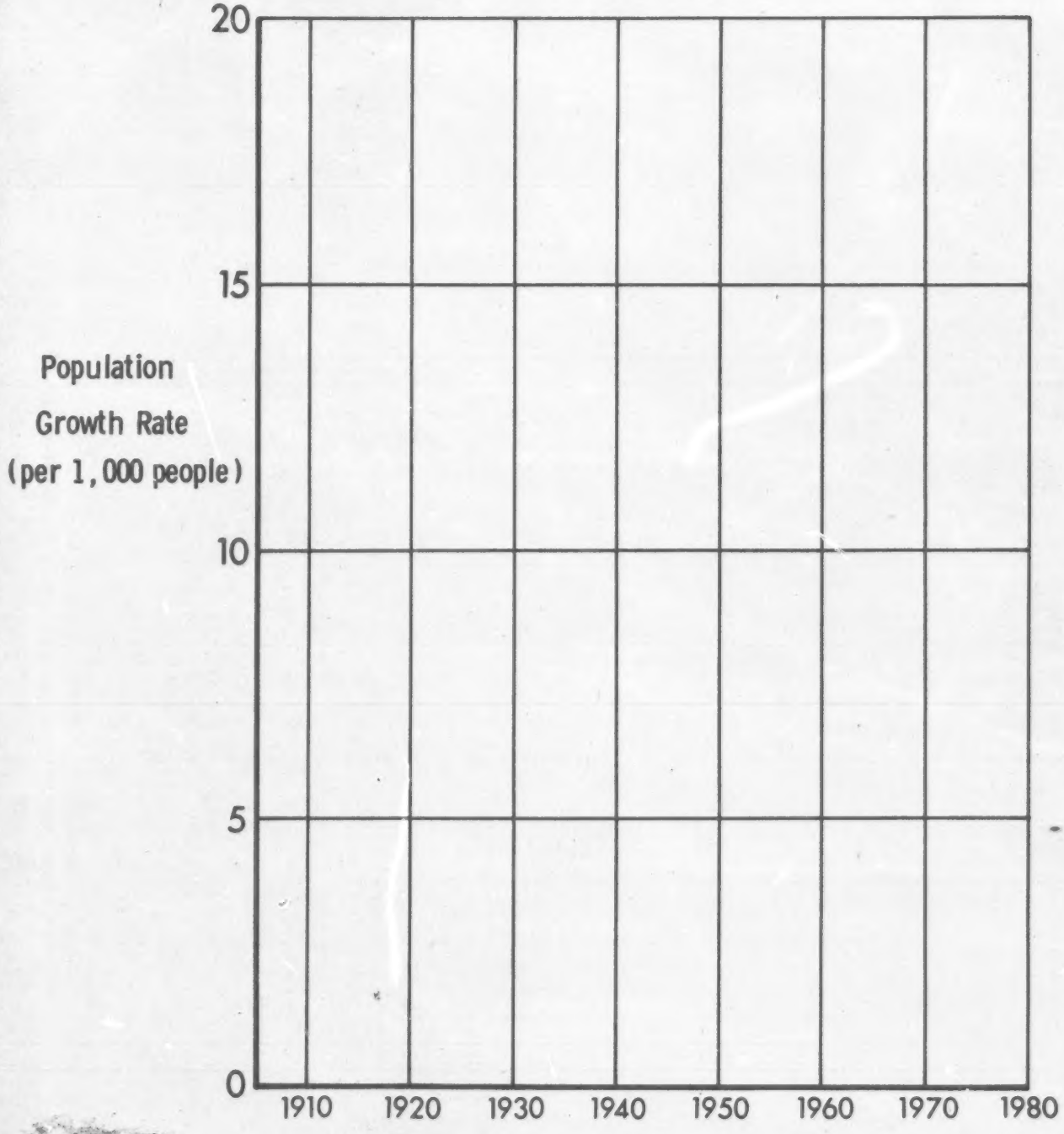
**P09**

The United States population growth rate has been declining lately. It also declined for a while before World War II. We can easily see this from the following data. For each year, the population growth rate per 1,000 people is given: 1950, 17.1; 1935, 6.3; 1965, 11.8; 1920, 18.8; 1955, 17.5; 1910, 15.2; 1975, 7.0; 1930, 7.3; 1940, 9.8; 1915, 14.9; 1960, 16.6; 1925, 13.8; 1970. 10.7; 1945, 10.7.

Name _____

P10

UNITED STATES POPULATION GROWTH RATE: 1910-1975



Name _____

P11

U. S. Population by Age Group - 1976

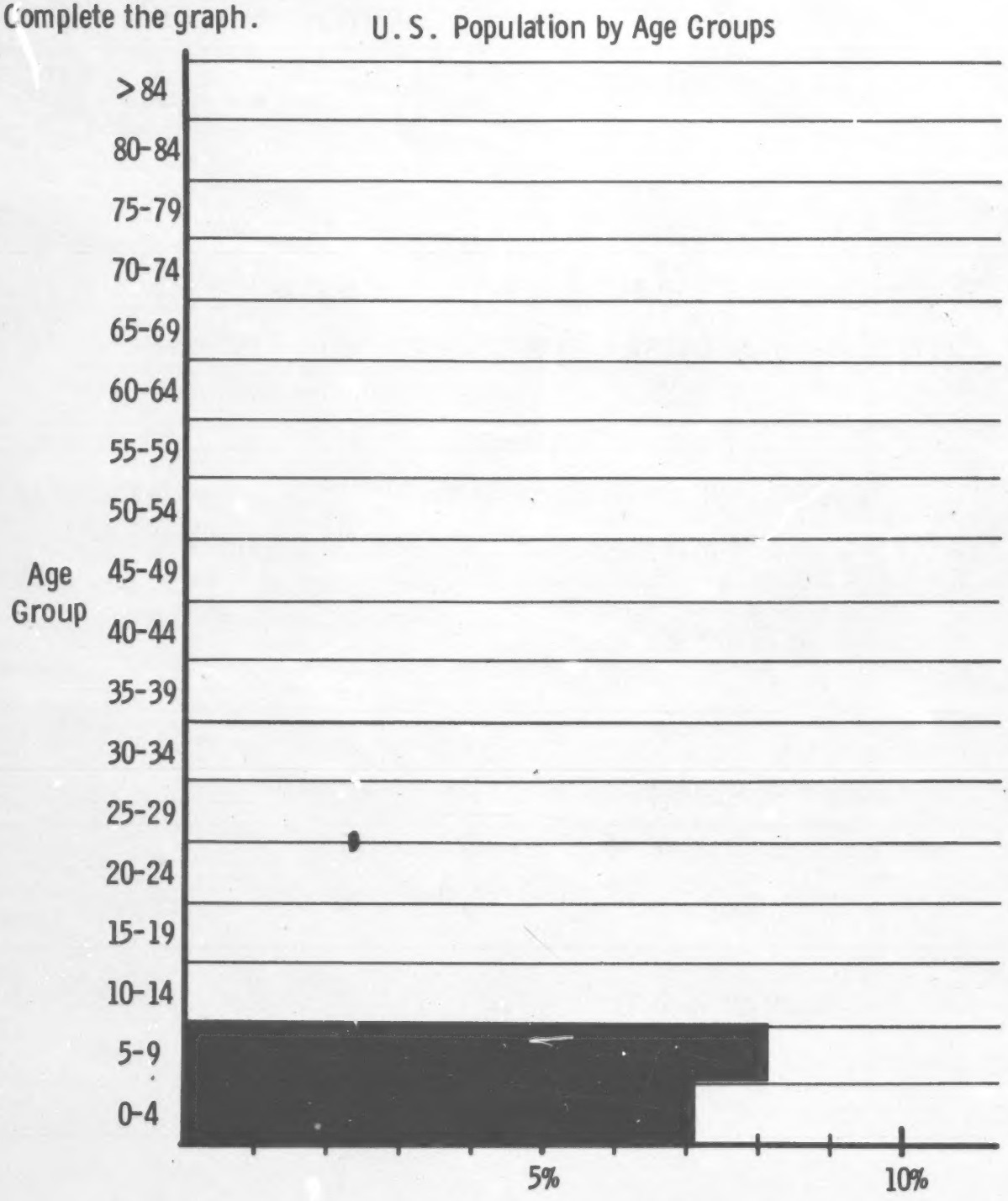
| Age | Percent of Total Population |
|---|---|
| 0-4 | 7.1 |
| 5-9 | 8.1 |
| 10-14 | 9.2 |
| 15-19 | 9.8 |
| 20-24 | 9.1 |
| 25-29 | 8.3 |
| 30-34 | 6.6 |
| 35-39 | 5.5 |
| 40-44 | 5.2 |
| 45-49 | 5.4 |
| 50-54 | 5.6 |
| 55-59 | 5.0 |
| 60-64 | 4.3 |
| 65-69 | 3.9 |
| 70-74 | 2.8 |
| 75-79 | 1.9 |
| 80-84 | 1.3 |
| > 84 | 0.9 |

1976 U. S. Population: 214,649,000

Name _____

**P12** *

Complete the graph.



Name _____ **P13** **

1. What percent of Americans in 1976 were 10-14 years old?_____

   How many Americans in 1976 were 10-14 years old?_____

2. What percent of Americans in 1976 were 65 years old or older?_____

   How many Americans in 1976 were 65 years old or older?_____

   What percent of Americans were less than 65 years old in 1976?_____

3. Many Americans still remember World War II. What percent of the Americans in 1976 were born before 1941 (near the beginning of World War II)?_____

   (Hint: Think about their age.)

4. What percent of Americans were 5-19 years old in 1976?_____

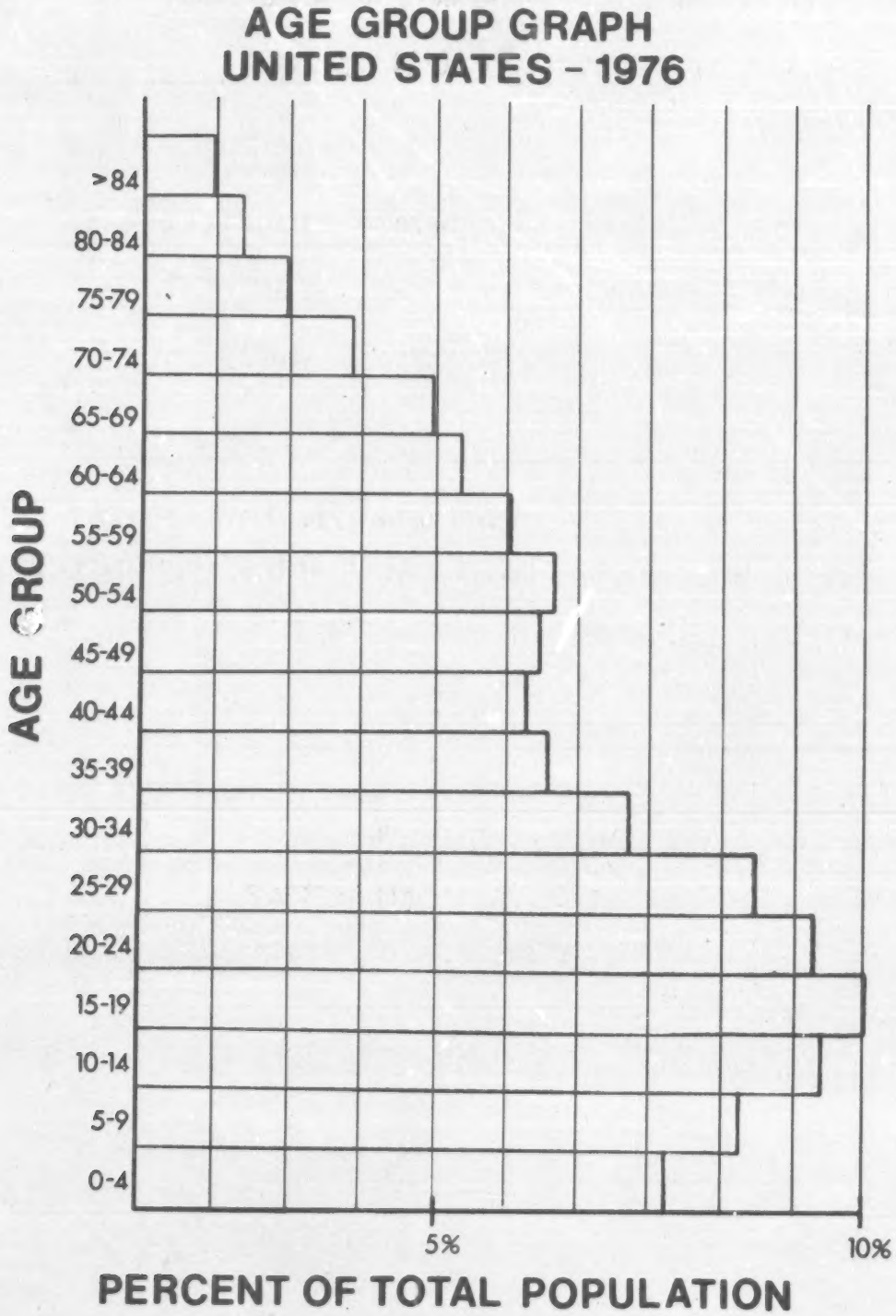
   How many Americans were 5-19 years old in 1976?_____

   In 1976, 82% of Americans 5-19 years old were in elementary or secondary schools.

   How many students is that?_____

Name _____

P 14

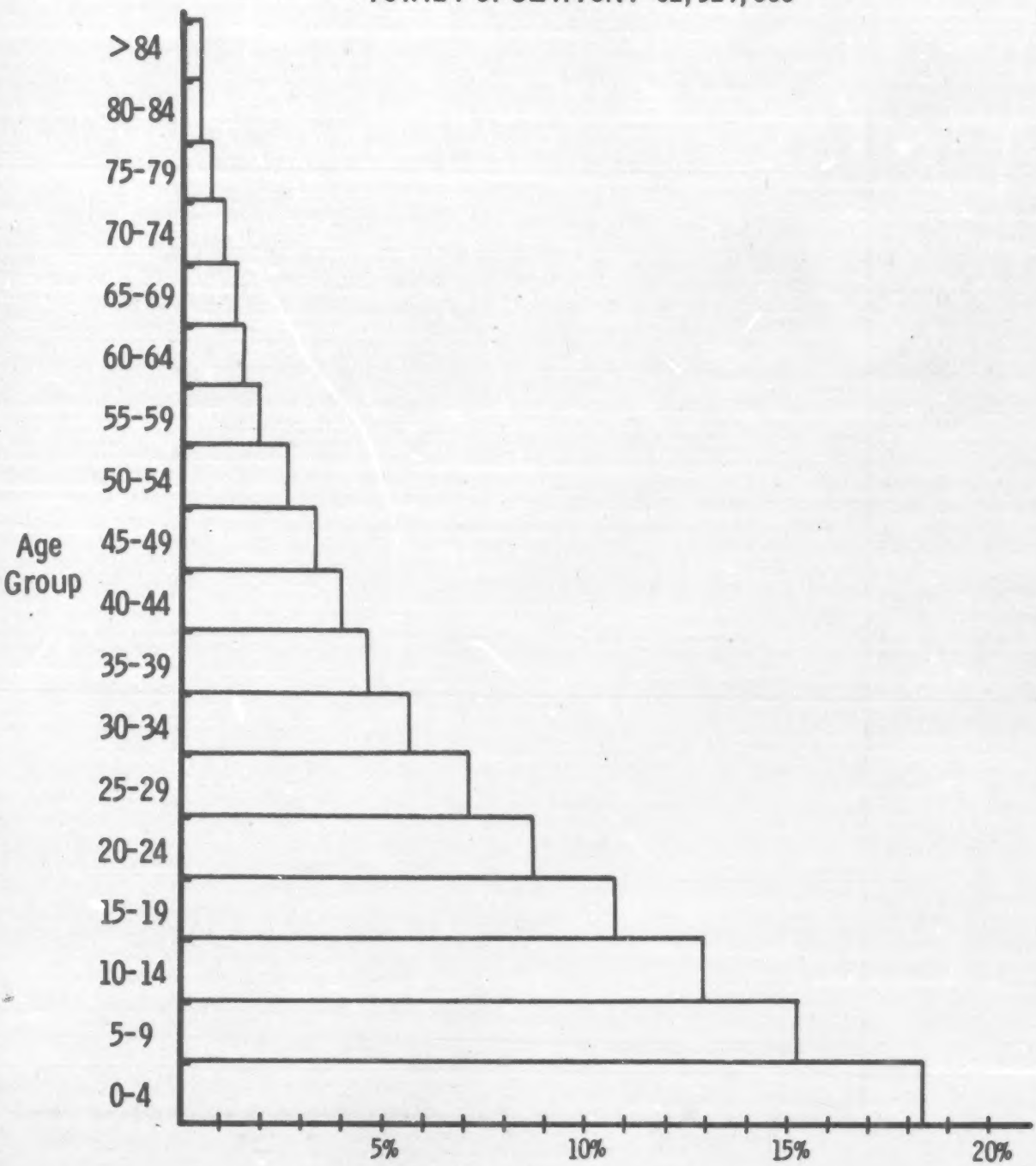

AGE GROUP GRAPH
UNITED STATES - 1976
>84
80-84
75-79
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
5-9
0-4
AGE GROUP
5%
10%
PERCENT OF TOTAL POPULATION

Name _____

**P 15**

POPULATION PYRAMID FOR MEXICO - 1976

TOTAL POPULATION: 62,329,000

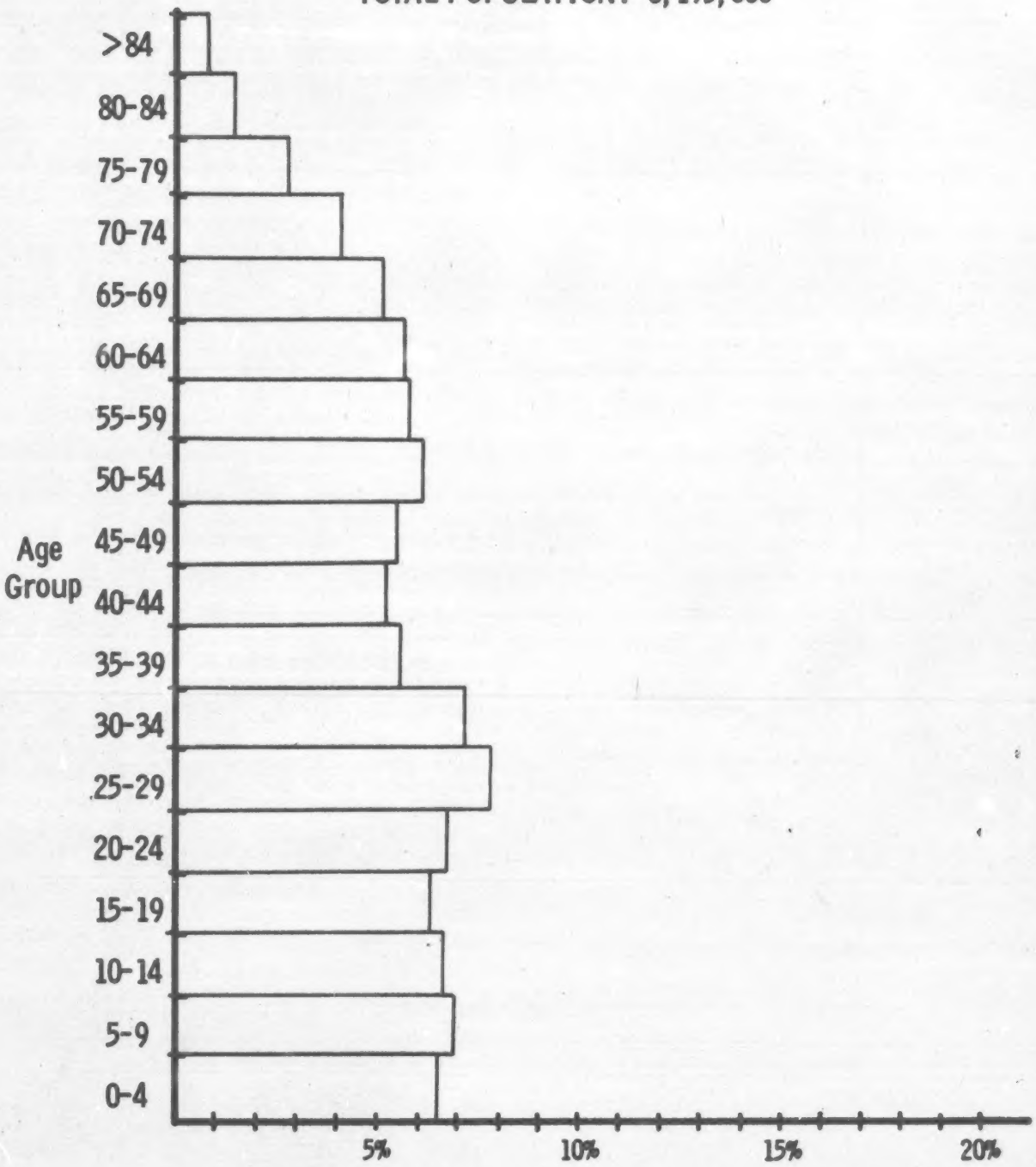


Name _____

P16

POPULATION PYRAMID FOR SWEDEN - 1975

TOTAL POPULATION: 8,193,000



Name _____ P 17 *

1. What percent of Americans are less than 20 years old?_____
   What percent of Mexicans are less than 20 years old?_____
   What percent of Swedes are less than 20 years old?_____
   Use this information to explain at least one problem that Mexico may face in the near future that Sweden and the United States probably will not face.

   _____

   _____

   How many Americans are less than 20 years old?_____
   How many Mexicans are less than 20 years old?_____
   How many Swedes are less than 20 years old?_____

2. What percent of Americans are 65 years old or older?_____
   What percent of Mexicans are 65 years old or older?_____
   What percent of Swedes are 65 years old or older?_____
   Use this information to describe at least one possible difference between life in Mexico and life in Sweden and in the United States.

   _____

   _____

   _____

   How many Americans are 65 years old or older?_____
   How many Mexicans are 65 years old or older?_____
   How many Swedes are 65 years old or older?_____

Name _____ **P 18** **

1. The median age of a population is the age that ½ or 50% of the people are younger than. In class you found that the median age in the United States is about 28 years. Calculate the medium age for:

   Sweden _____

   Mexico _____

2. About 3.5% of all Americans live in New York City. What is the population of New York City? _____

   About 18.2% of all Mexicans live in Mexico City. What is the population of Mexico City? _____

3. It is predicted that in the year 2000 the population of New York City will be 7,200,000 and that 2.7% of all Americans will live in New York City. If these predictions are true, what will the population of the United States be in the year 2000? _____

   It is predicted that in the year 2000 the population of Mexico City will be 32,000,000 and that 23% of all Mexicans will live in Mexico City. If these predictions are true, what will the population of Mexico be in the year 2000? _____

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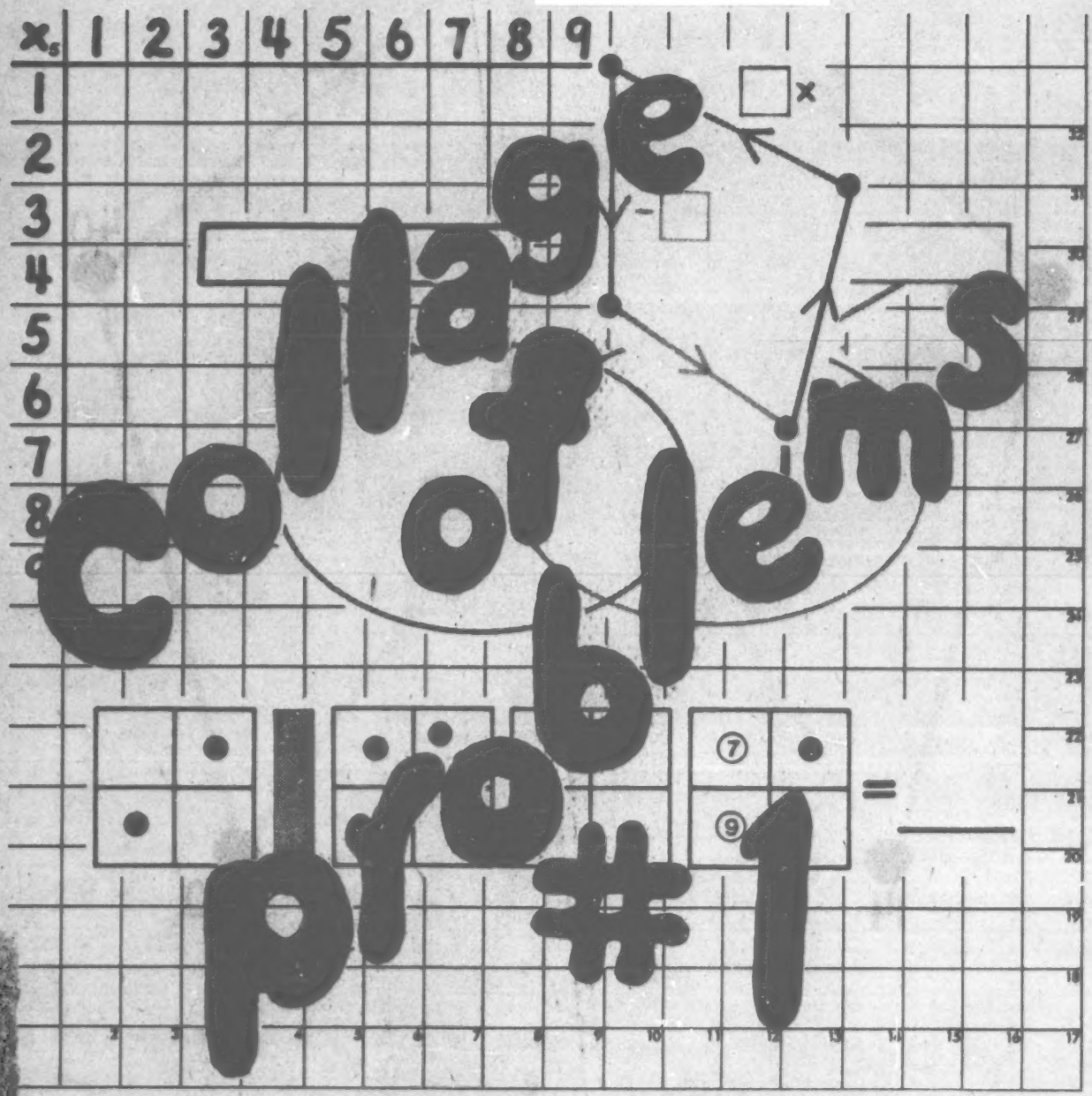
Name _____

6-39601

SE

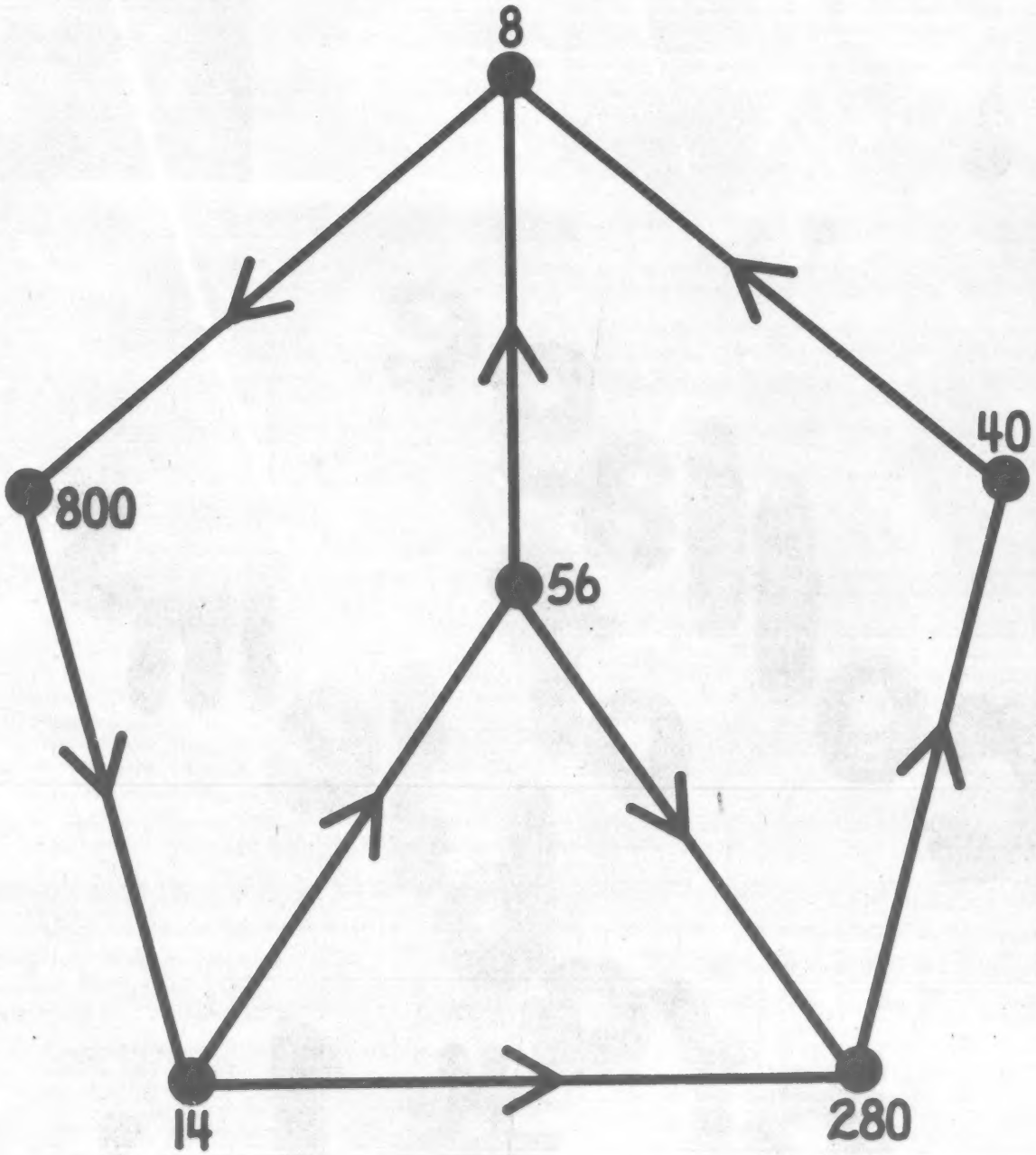



# collage problems



MAY 16 1980

Label the red arrows; try to label some arrows in two ways.



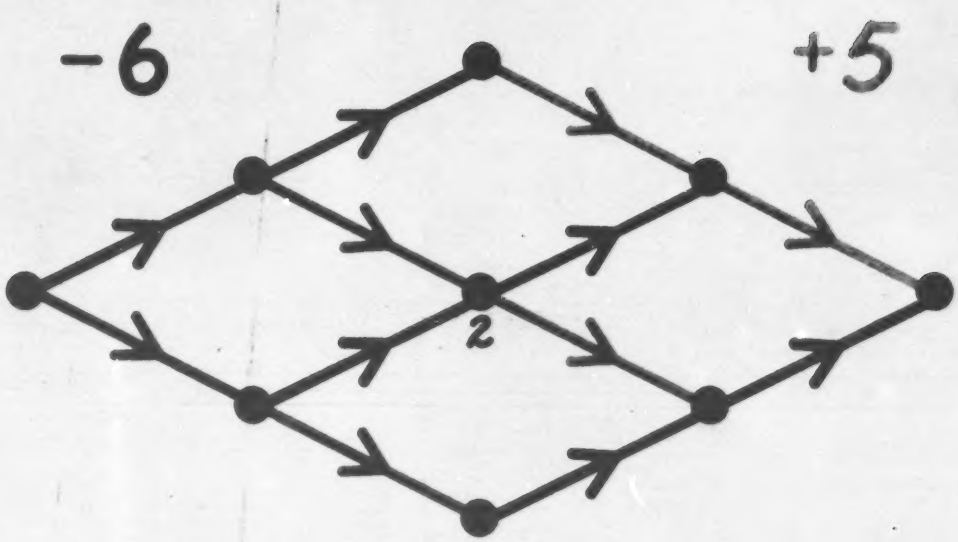

94

Build a road from 9 to 119. Each arrow must be for $+\square$, $-\square$, $\times\square$, or $\div\square$, where exactly one of the digits: 1, 2, 3, 4, 5, 6, 7, 8 or 9 is in a box. Build as short a road as you can.

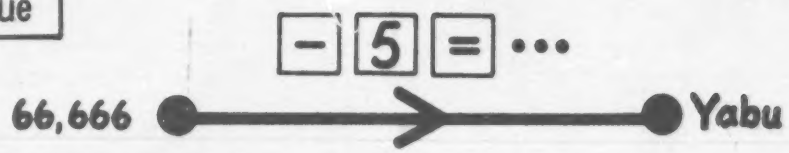
Yabu is a secret number.

**First clue**

Yabu is in this arrow picture.

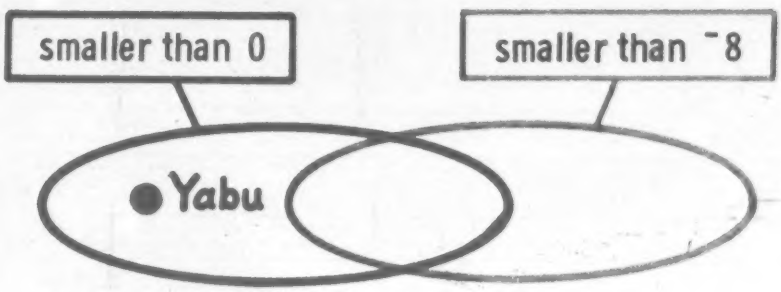



**Second clue**




Yabu could be _____, _____, or _____.

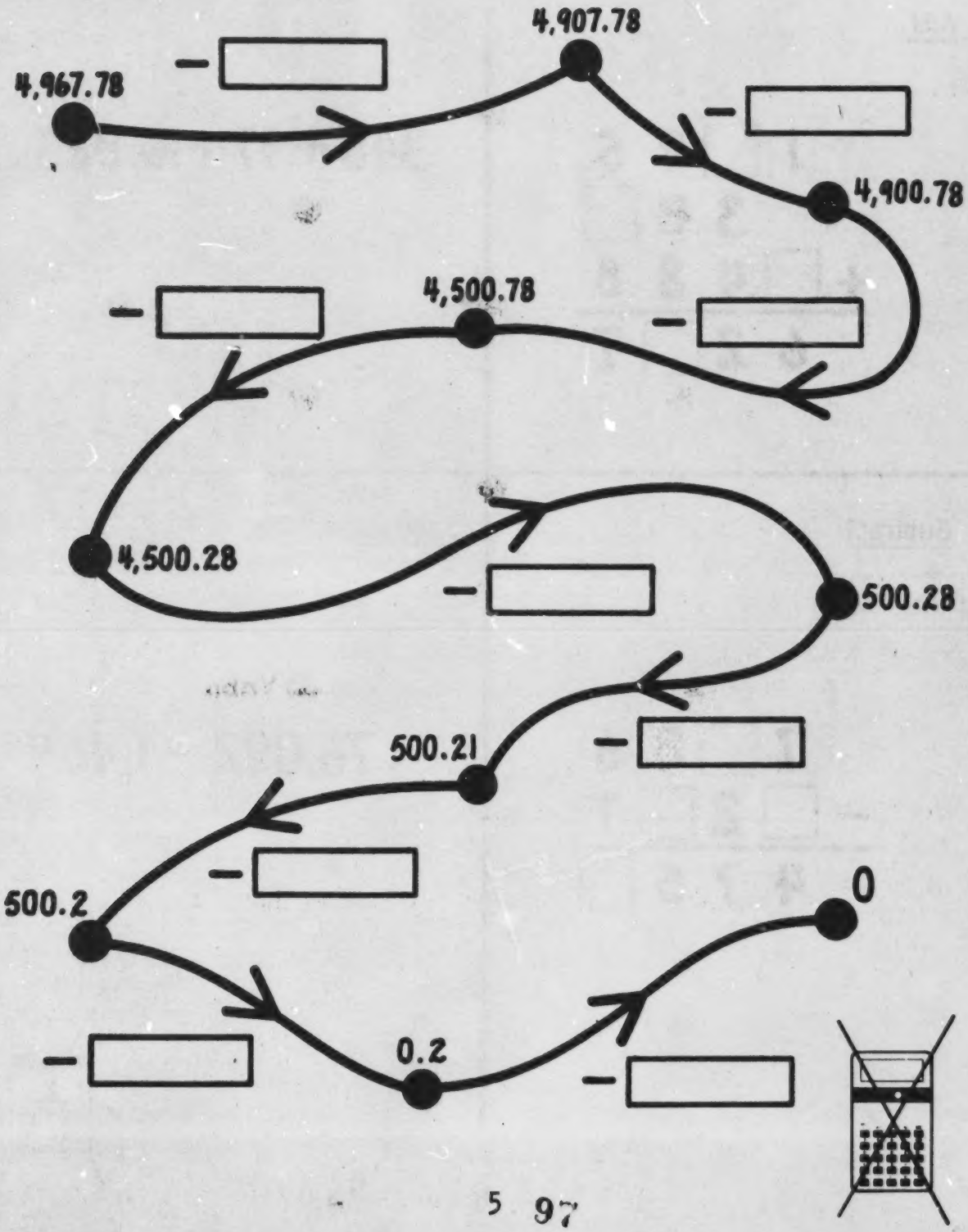
**Third clue**




Yabu is _____.

# WIPE-OUT

Fill in the boxes for the arrows.



Put one of the digits: 0, 1, 2, 3, 4, 5, 6, 7, 8, or 9 in each box to make the calculations correct. You may use a digit more than once.

**Add**

$$\begin{array}{r} 1\square 95 \\ 33\square \\ +\square 488 \\ \hline 62\square 7 \end{array}$$

**Add**

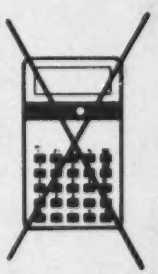
340 + 97 + 16,823

**Subtract**

$$\begin{array}{r} 7\square 86 \\ -\square 2\square 7 \\ \hline 475\square \end{array}$$

**Subtract**

76,092 − 1,459



Complete each of these tables.

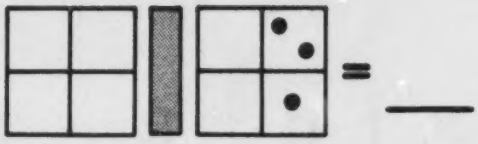
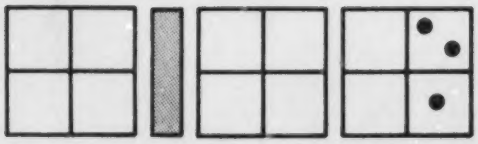
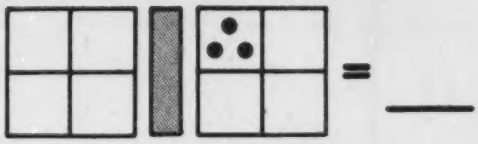
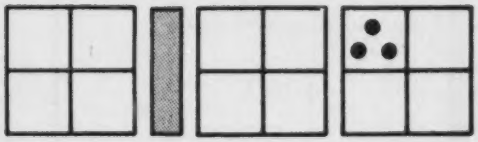
| $+_5$ | 7 | 13 |
|---|---|---|
| 9 | | |
| 23 | | |

| $\times_5$ | 4 | 8 |
|---|---|---|
| 7 | | |
| 9 | | |

| $T_<$ | 20 | $^-4$ |
|---|---|---|
| 8 | | |
| $^-8$ | | |

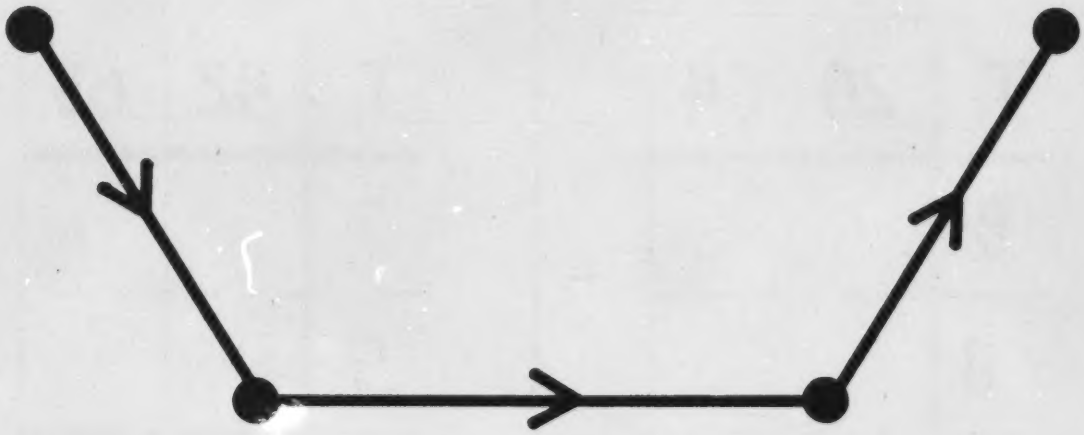
| $T_D$ | 42 | 63 |
|---|---|---|
| 7 | | |
| 9 | | |

Complete.

Label these dots with the four numbers above.

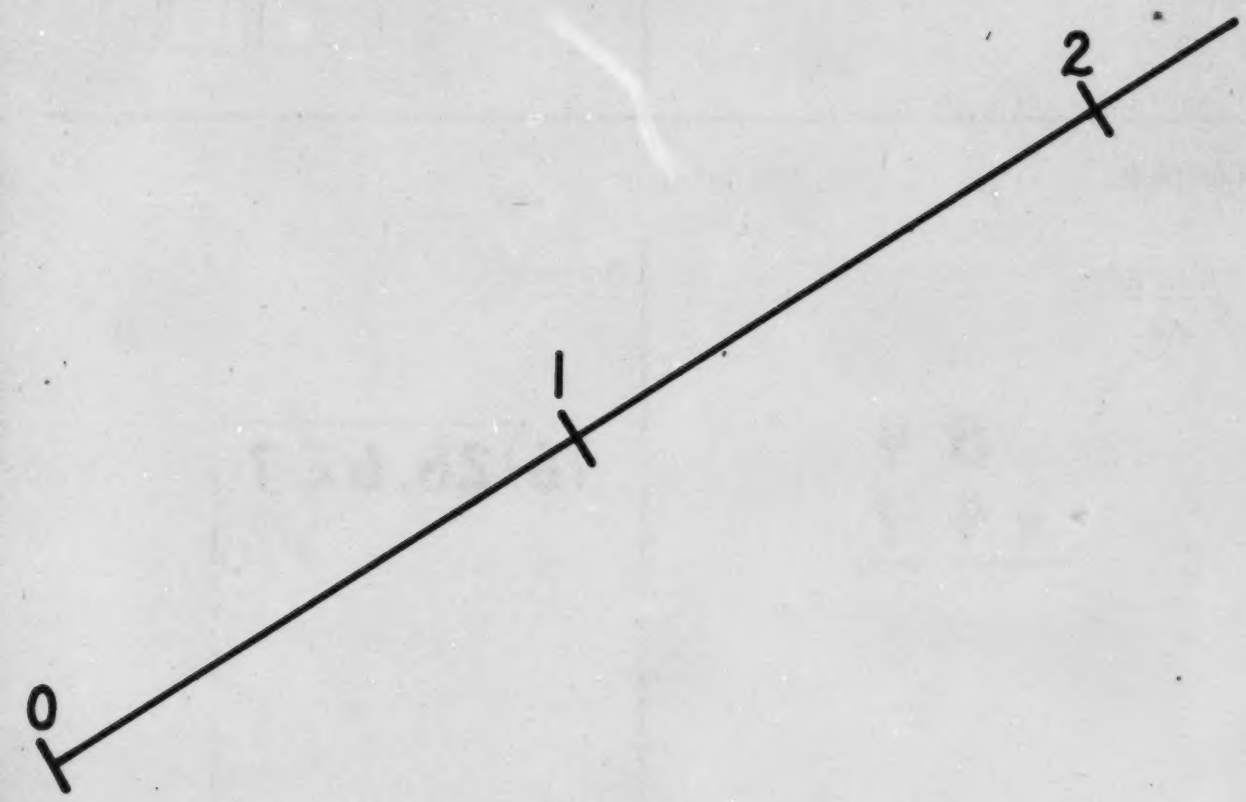
is smaller than



Using a ruler, draw a dot for each of these numbers on the number line.

$\frac{1}{3}$ $\frac{2}{3}$ $\frac{3}{3}$ $\frac{4}{3}$

$\frac{1}{2}$ $\frac{2}{2}$ $\frac{3}{2}$



Put one of the digits: 0, 1, 2, 3, 4, 5, 6, 7, 8, or 9 in each box to make the calculation correct. You may use a digit more than once.

**Multiply**

$$\begin{array}{r} \square 6 \square \\ \times \quad 3 \\ \hline 23 \square 4 \end{array}$$

**Divide**

$$\begin{array}{r} \square\square \text{ R} = \square\square \\ 43\overline{)1137} \\ \square\square 0 \quad \square 0 \\ \hline \square 7 \square \\ \square 5 \square \quad \square \\ \hline \square\square \quad \square\square \end{array}$$

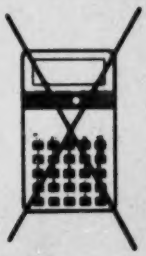
Complete.

**Multiply**

$$\begin{array}{r} 84 \\ \times 47 \\ \hline \end{array}$$

**Divide**

$$76\overline{)26,627}$$

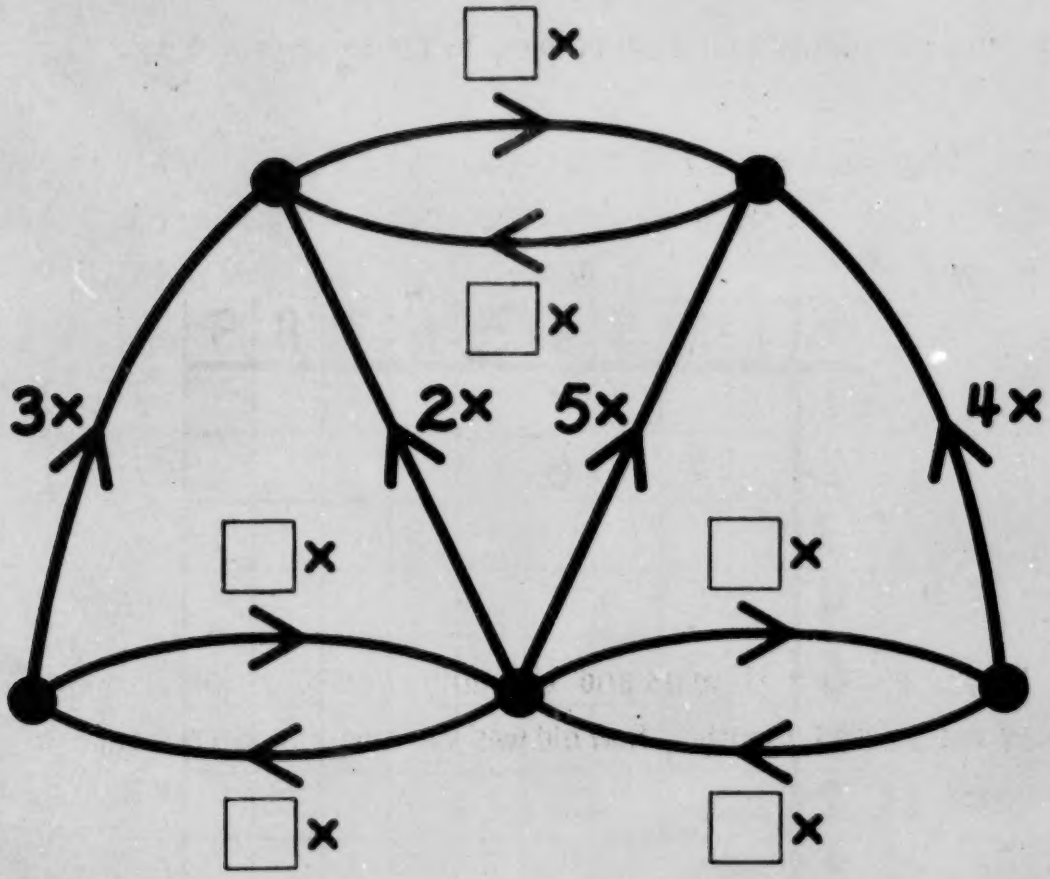


Find all the places in this table for $+_{10}$ where the entry is 6.
One is located for you.

| $+_{10}$ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |
| 2 | | | | 6 | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |

Did you find the other seven places where the entry is 6? _____

Label the blue arrows.




Complete these calculations.

$\frac{3}{2} \times 18 =$ ___

$\frac{2}{5} \times 30 =$ ___

$\frac{2}{3} \times 18 =$ ___

$\frac{5}{2} \times 30 =$ ___

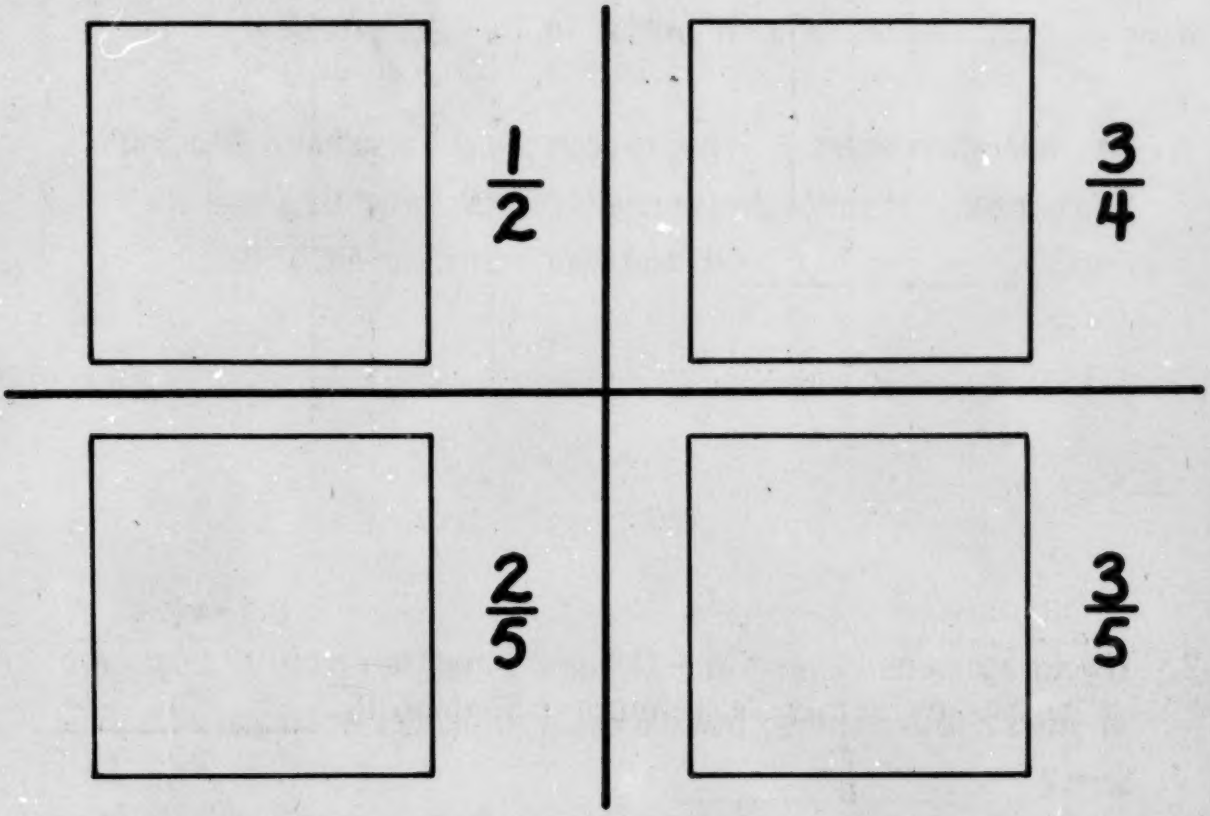
## TIMELY QUESTIONS

Write your calculations for each problem in the space provided.

1. Ms. Shoreham works $7\frac{1}{2}$ hours each day and also has a 40 minute lunch break. If she begins work at 7:45 AM, what time does she finish? _____ (Remember to indicate AM or PM.)

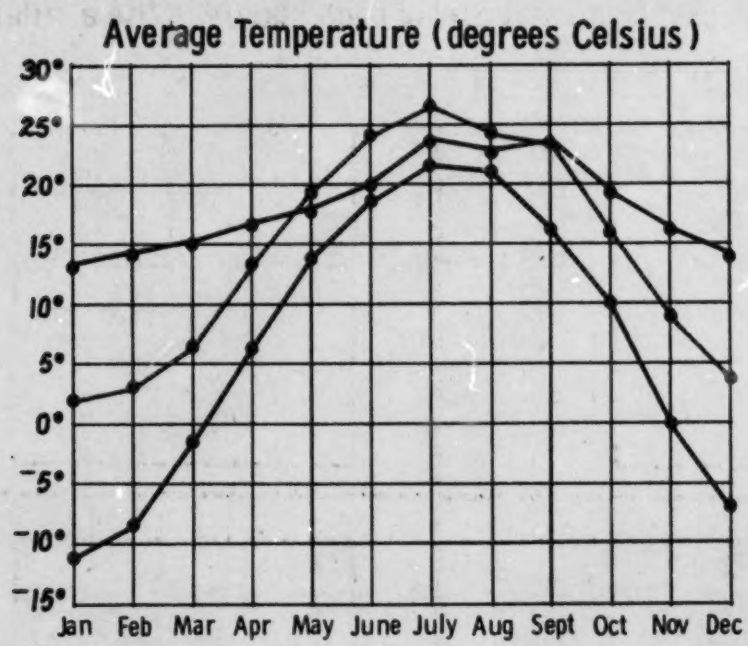
2. If your age were 11 years and 11 months and your mother's age were 34 years and 2 months, how old was your mother when you were born? _____

Color in red the indicated fractional part of each square. Use a ruler to divide the squares accurately.




Draw all the possible red arrows between these numbers.

is smaller than →




Minneapolis Washington, D.C. Los Angeles

What is the average February temperature in Minneapolis? _____

How much colder is Minneapolis than Los Angeles in September? _____

in January? _____

For how many months is Washington, D.C.'s average temperature below 10°C? _____

In which month is Minneapolis's average temperature closest to Los Angeles's? _____ How close? _____

In which months is Los Angeles at least 10°C warmer than Washington, D.C.? _____

Fill in the boxes.

$$\frac{1}{2} = \frac{7}{14} = \frac{\square}{8} = \frac{3}{\square} = \frac{\square}{10} = \frac{13}{\square}$$

$$\frac{3}{5} = \frac{9}{15} = \frac{\square}{10} = \frac{15}{\square} = \frac{\square}{50} = \frac{21}{\square}$$

Complete. You may use the different names for $\frac{1}{2}$ and $\frac{3}{5}$ at the top of this page.

$$\frac{3}{5} + \frac{1}{2} = \underline{\quad}$$

$$\frac{3}{5} - \frac{1}{2} = \underline{\quad}$$

## HOW OLD ?

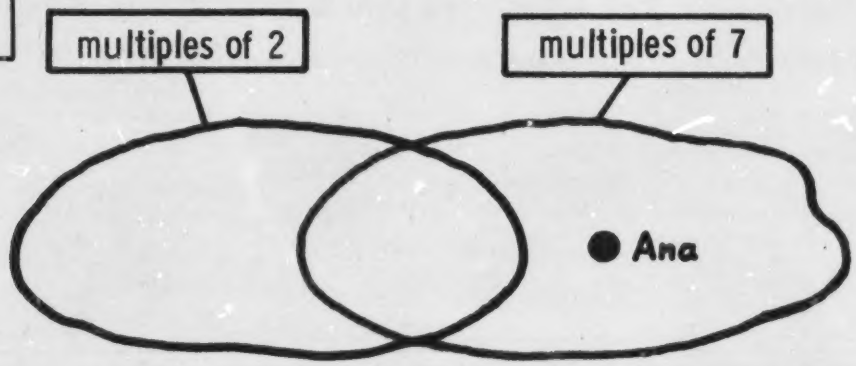
Lillian is 8 years older than Gina. The sum of their ages is 30 years.
How old is Lillian? _____ Gina? _____

## HOW RICH ?

Andre has exactly ten coins in his pocket. He has only dimes and quarters.
If he has $2.05, how many quarters does he have? _____ dimes? _____

Ana is a secret number smaller than 70.

**First clue**




Ana could be ____, ____, ____, ____, or ____.

**Second clue**

(Ana, Una) could be (____, ____), (____, ____), (____, ____), (____, ____), or (____, ____).

**Third clue**

| | | |
|---|---|---|
| ↑ | 40 | Una |
| Ana | 40 | Una |
| 30 | 40 | Una |

(Ana, Una) is (____, ____)

SCALE: 1 cm on the map = 100 kilometers

1. On the map, what is the length of a line segment between El Paso and San Antonio? _____ cm
   What is the real distance between El Paso and San Antonio? _____ km

2. On the map, what is the length of a line segment between Dallas and Houston? _____ cm
   What is the real distance between Dallas and Houston? _____ km

3. If an airplane flies 600 kilometers in 1 hour, about how long should the flying time be from El Paso to San Antonio? (Circle the closest answer.)

   50 minutes  1 hour 20 minutes  1 hour 50 minutes

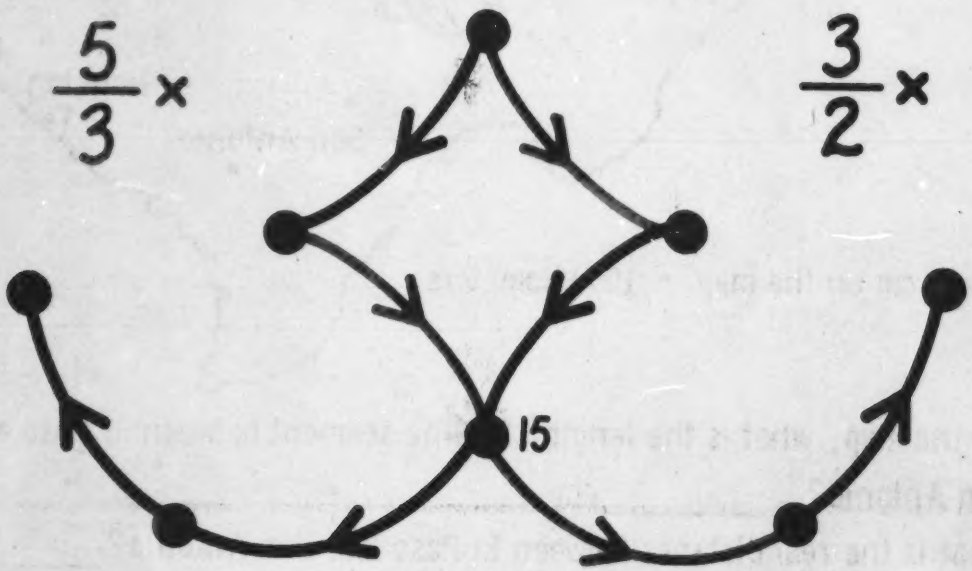
4. If an airplane flies 400 kilometers in 1 hour, about how long should the flying time be from Dallas to Houston? (Circle the closest answer.)

   50 minutes  1 hour 10 minutes  1 hour 30 minutes

Vic is a secret number.

**First clue**

Vic is in this arrow picture. Label the dots.

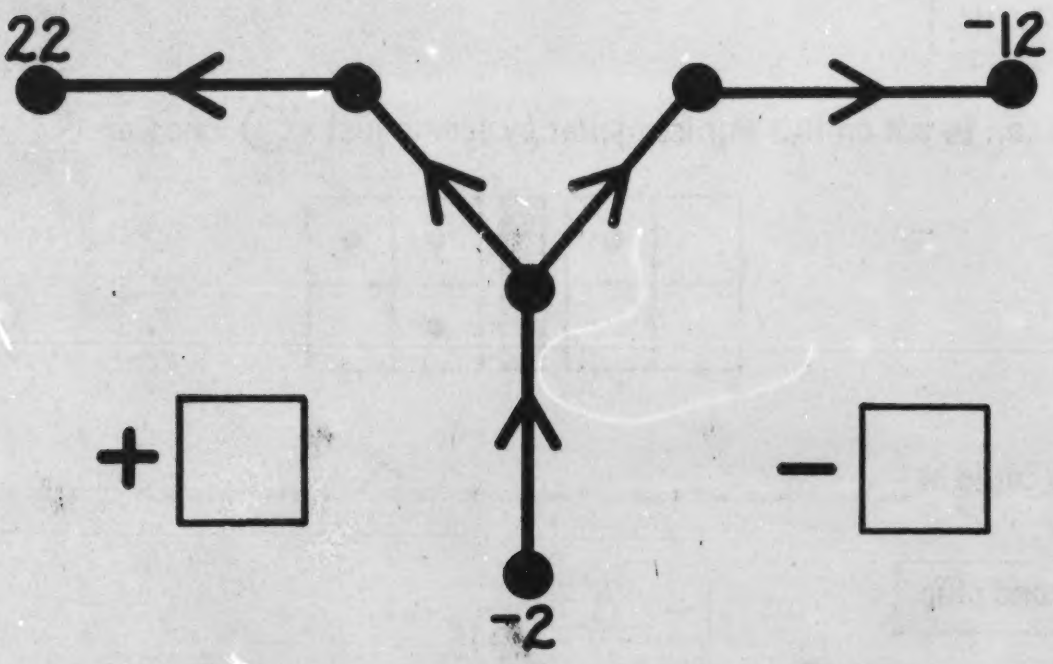


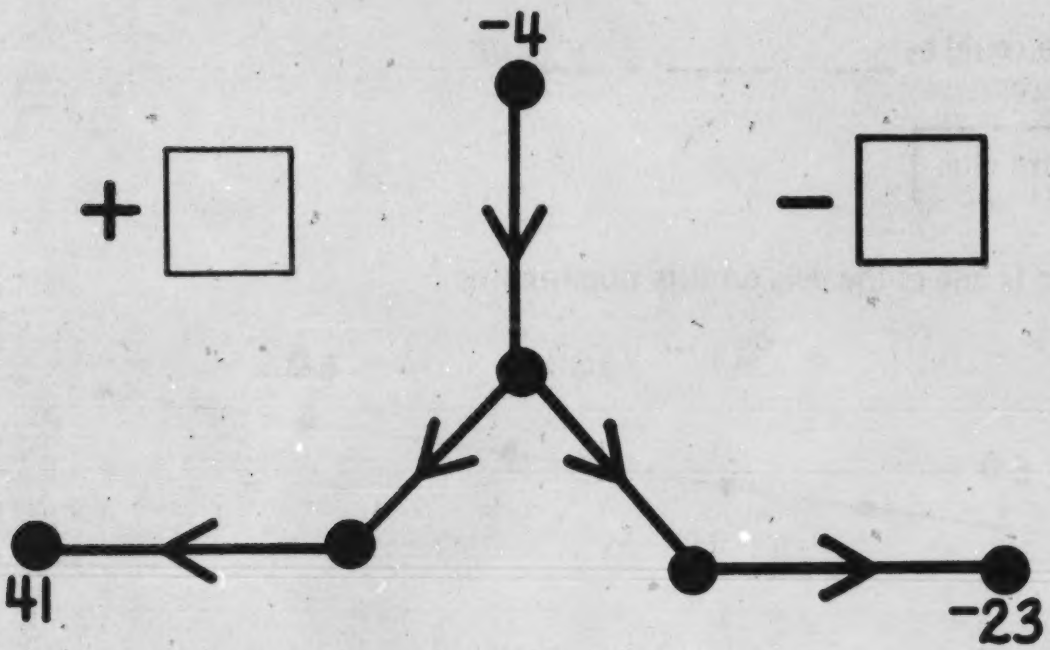

**Second clue**

$$\text{Vic} \downarrow 30 = \text{Vic} \qquad \text{Vic } T_{<} \ 23 = 0$$

Who is Vic?____

Fill in the boxes for the arrows. Label the dots.

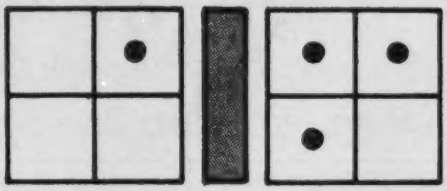


Dano is a secret number.

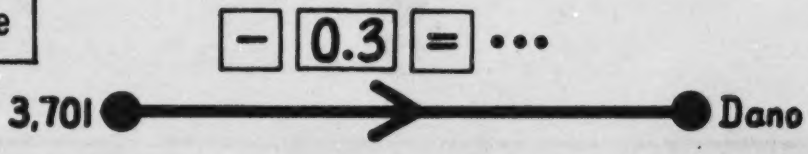
**First clue**

Dano can be put on this Minicomputer by adding just a (2)-checker.



Dano could be ____, ____, ____, ____, ____, ____, ____, or ____.

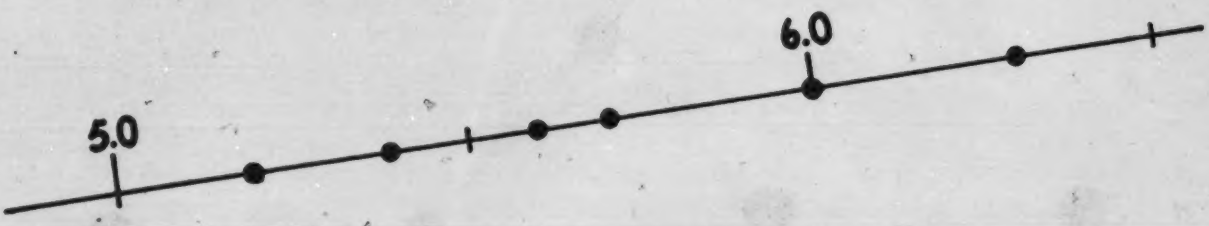
**Second clue**




Dano could be ____, ____, ____, or ____.

**Third clue**

Dano is one of the dots on this number line.




Dano is ____.

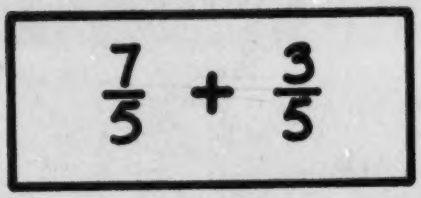
A city council must choose a committee of three people from the five eligible members: Arlene, Bret, Carla, Dinah, and Ed. The selection is not easy due to the many friendships and jealousies among these people.

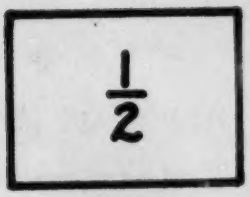
Arlene will serve on the committee with anyone.
Bret won't serve on the committee with Arlene.
Carla will serve on the committee only if Bret and Dinah also serves.
Dinah won't serve if Arlene or Carla also serves.
Ed won't serve unless Dinah also serves.

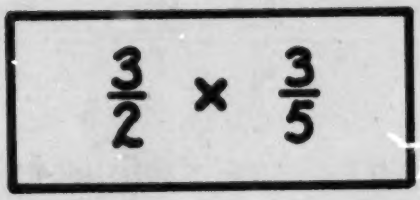
Can you select a committee of three people so that everyone is satisfied?

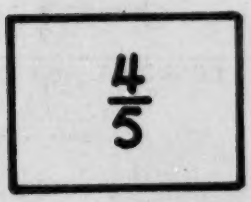
Who is on your committee? _____, _____, _____

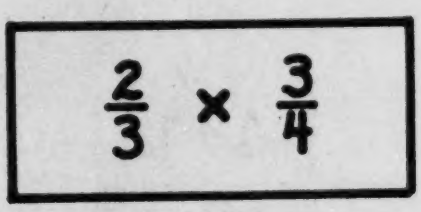
Pair the tags.

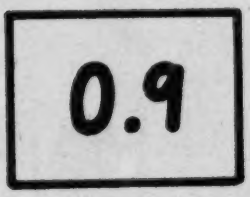


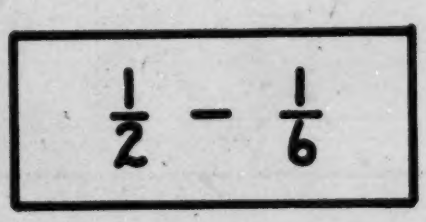



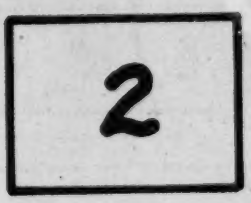



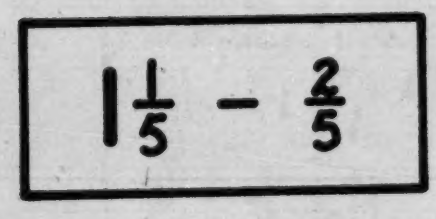



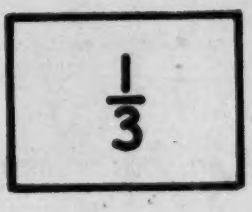



Each table is for one of these operations.

THE TABLE GAME

| | | | |
|---|---|---|---|
| $+$ | $+_3$ | $+_5$ | $+_{10}$ |
| $-$ | $-_3$ | $-_5$ | $-_{10}$ |
| $\times$ | $\times_3$ | $\times_5$ | $\times_{10}$ |
| $\uparrow$ | $\downarrow$ | $\sqcap$ | $\sqcup$ |
| $T_D$ | $T_M$ | $T_<$ | $T_>$ |
| | $T_{-2}$ | $T_{-4}$ | |

Label the tables.

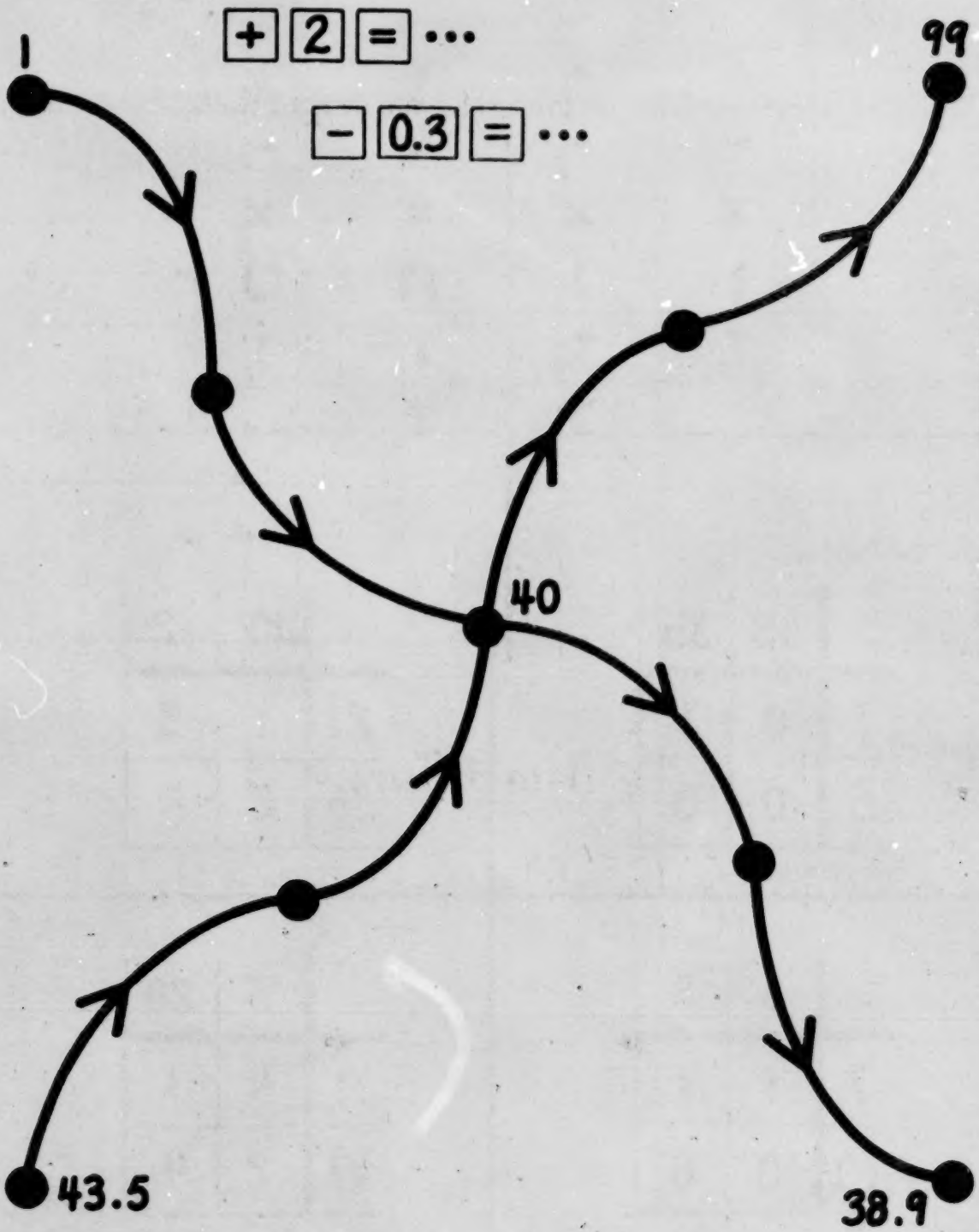
| | 48 | 35 |
|---|---|---|
| 7 | 0 | 1 |
| 6 | 0 | 0 |

| | 10 | 12 |
|---|---|---|
| 21 | 1 | 3 |
| 16 | 2 | 4 |

| | 3 | 8 |
|---|---|---|
| 7 | 1 | 1 |
| 10 | 0 | 0 |

| | 5 | 28 |
|---|---|---|
| 9 | 4 | 1 |
| 17 | 2 | 4 |

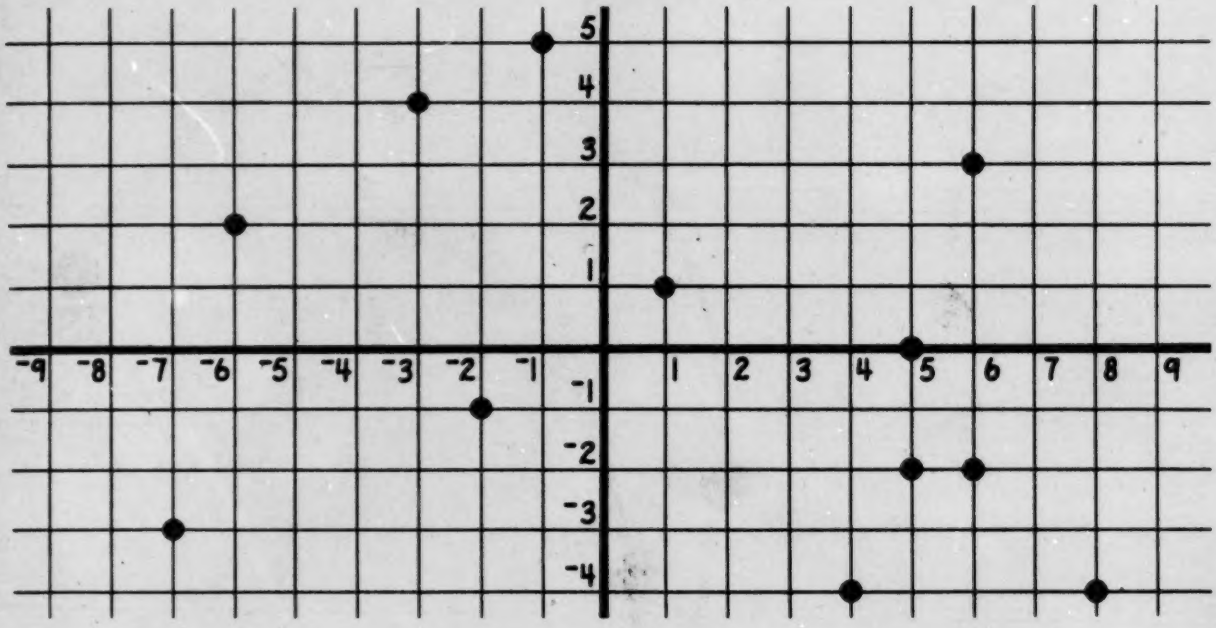
Label the dots. Many answers are possible.



Tim and Tam are secret numbers.

**First clue**

(Tim, Tam) is one of the dots on this grid. You do not have to label the dots.

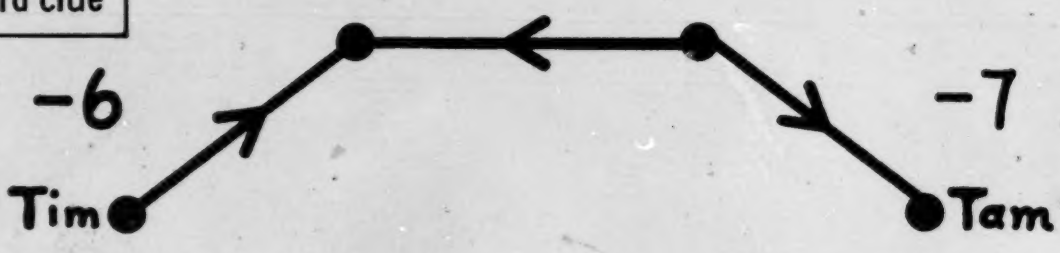



**Second clue**

$$Tim + Tam > 3$$

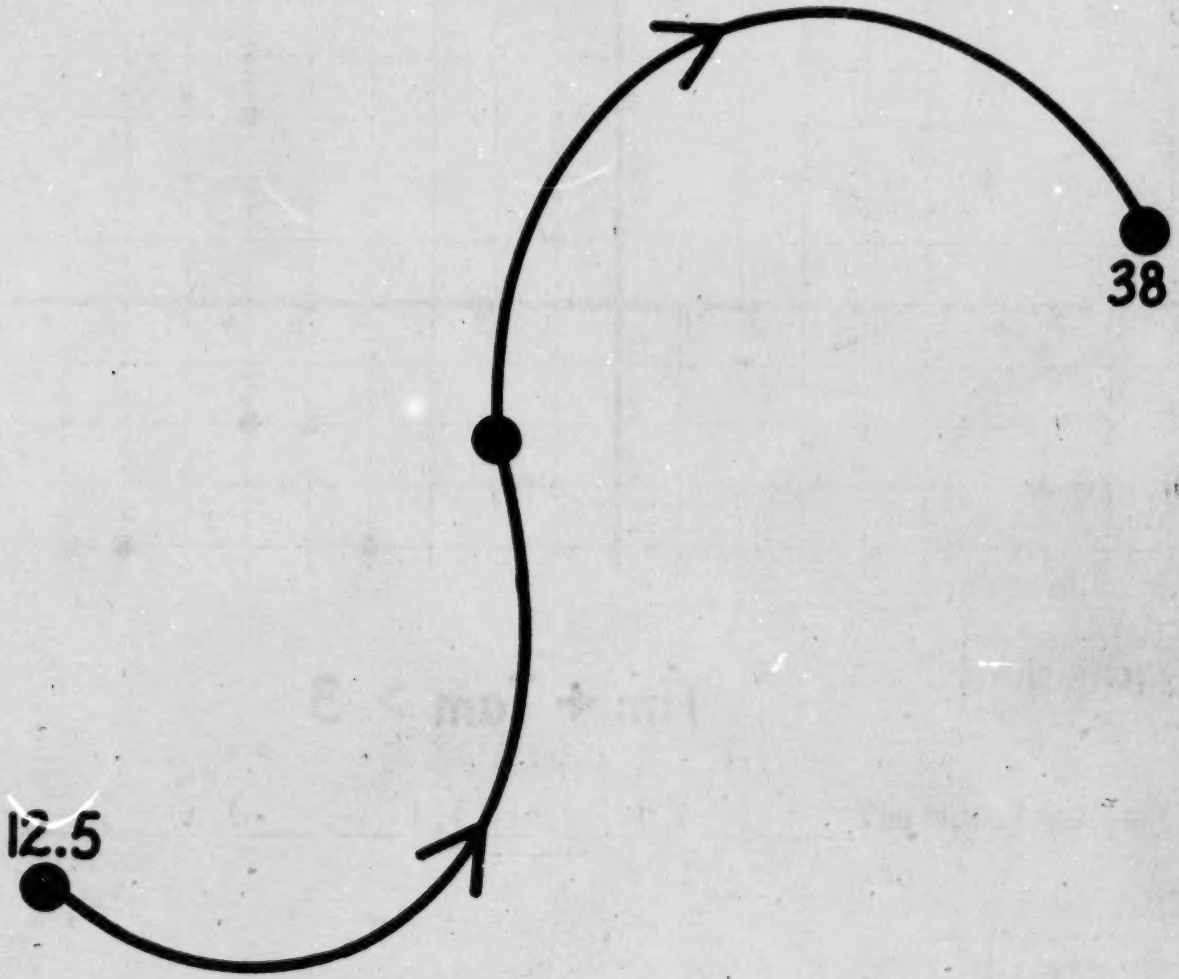
(Tim, Tam) could be (___, ___), (___, ___), (___, ___), (___, ___) or (___, ___).

**Third clue**




(Tim, Tam) is (___, ___).

Build a road from 12.5 to 38 with two arrows. Each arrow must be for $+\square$, $-\square$, $\times\square$, or $\div\square$, where exactly one of the digits: 1, 2, 3, 4, 5, 6, 7, 8, or 9, is in a box.





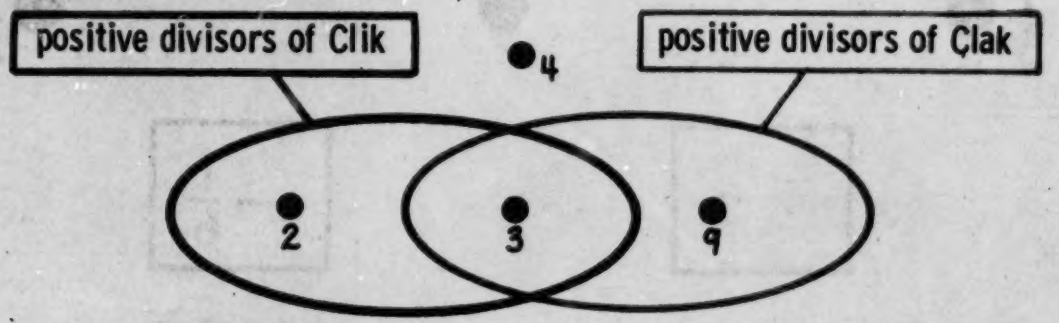

120

Clik and Clak are secret whole numbers.

**First clue**

Clik and Clak are smaller than 50.

**Second clue**




Clik could be _____, _____, or _____.

Clak could be _____, _____, or _____.

**Third clue**

$$Clik +_s Clak = 4$$

(Clik, Clak) could be (_____, _____) or (_____, _____).

**Fourth clue**

$$Clik -_s Clak = 0$$

(Clik, Clak) is (_____, _____).



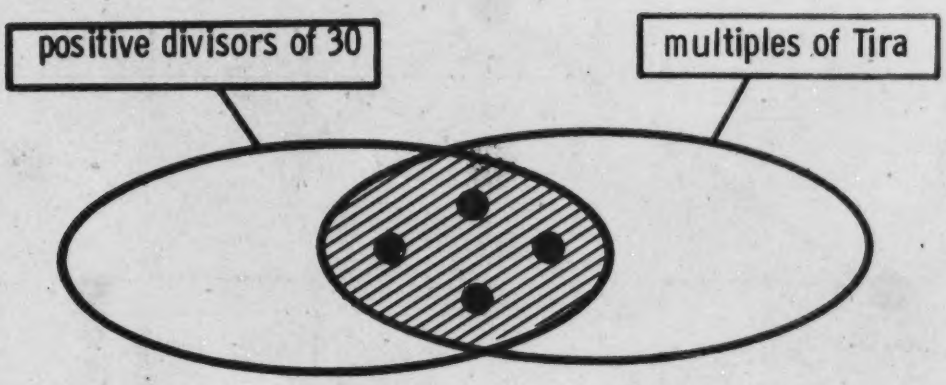
121

Pair the tags.

| | |
|---|---|
| $+\frac{1}{4}$ | $-\frac{1}{6}$ |
| $-\frac{1}{4}$ | $\times\frac{6}{7}$ |
| $\times\frac{3}{4}$ | $\times 6$ |
| $\div\frac{1}{2}$ | $\times\frac{3}{10}$ |
| $\times 5$ | $\div\frac{1}{2}$ |

Tira is a secret whole number.

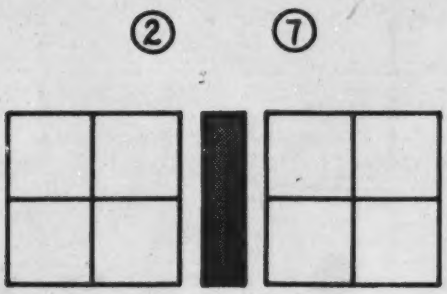
**First clue**




Tira could be _____, _____, or _____.

**Second clue**

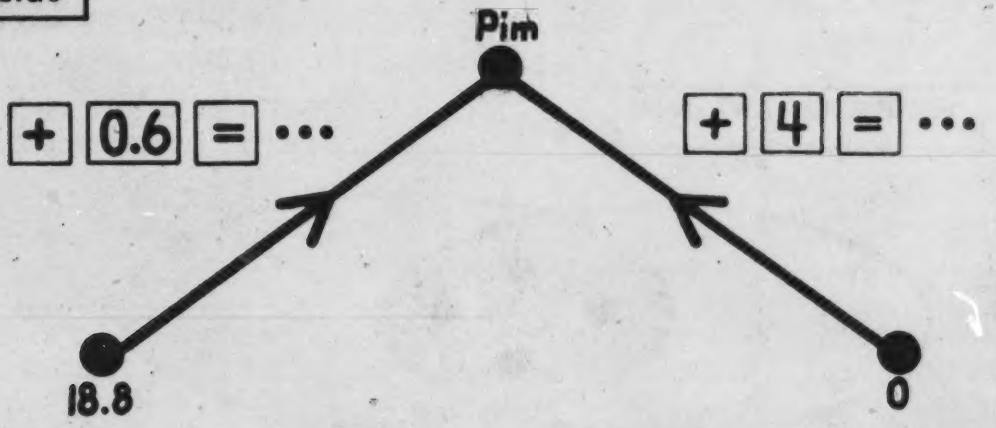
Tira can be put on this Minicomputer with exactly these two checkers.




Tira is _____

Pim is a secret number.

**First clue**



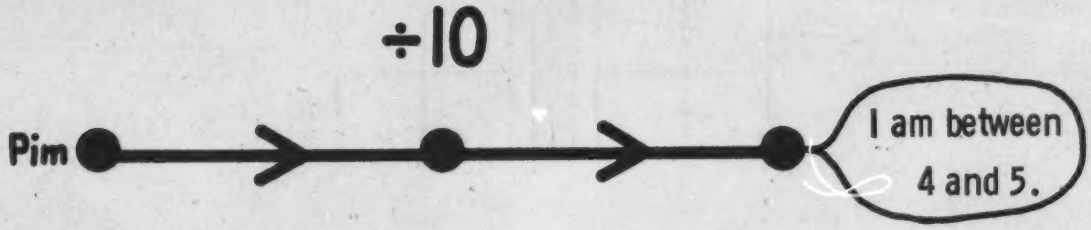

Pim could be ___, ___, ___, ___, ___, ___, ___, ___, and so on.

**Second clue**

$$\text{Pim} =_s 7$$

Pim could be _____, _____, _____, _____, and so on.

**Third clue**

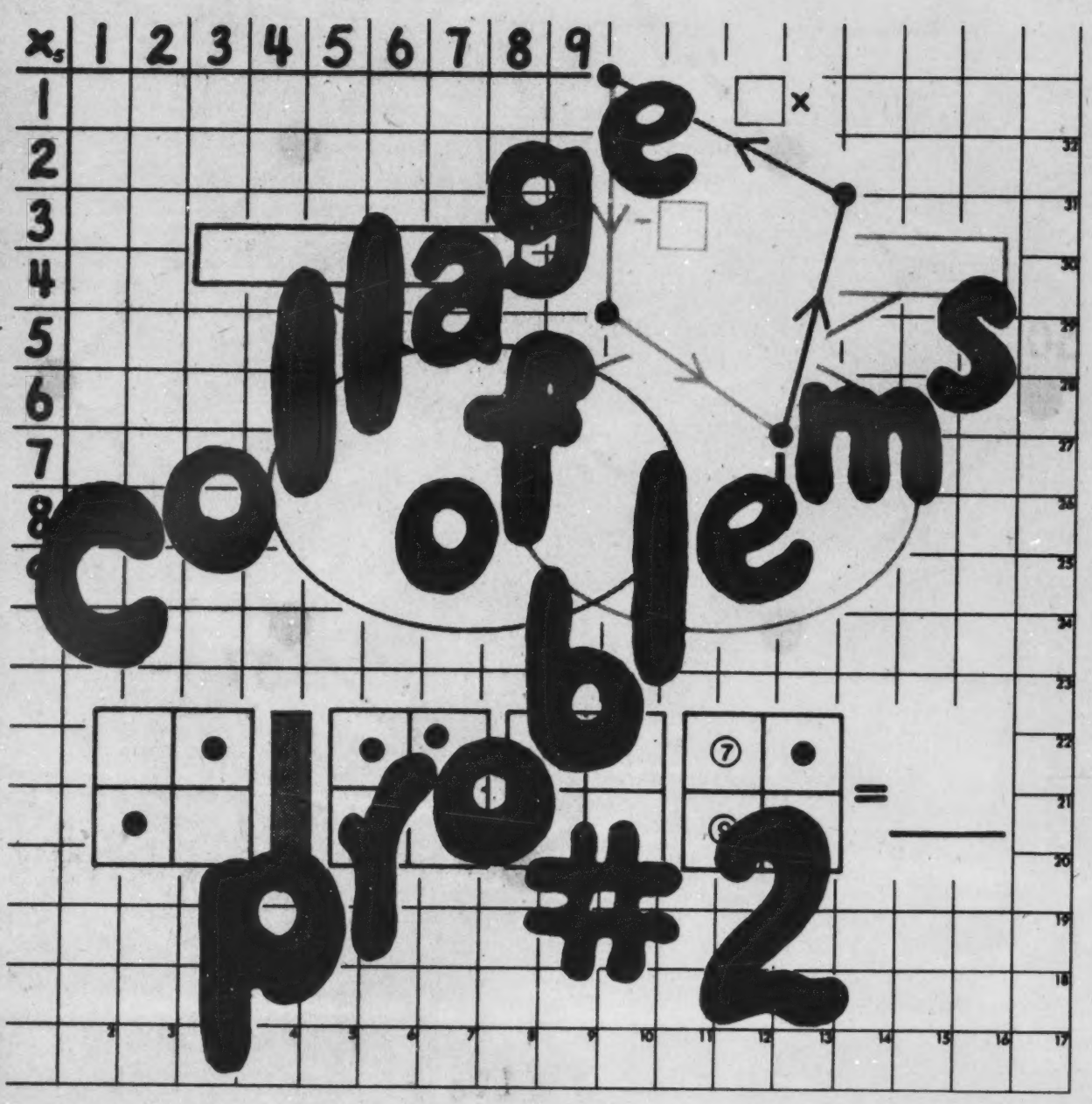



Pim is _____.

Copyright © 1979 CEMREL, Inc.

Name _____

6-39701

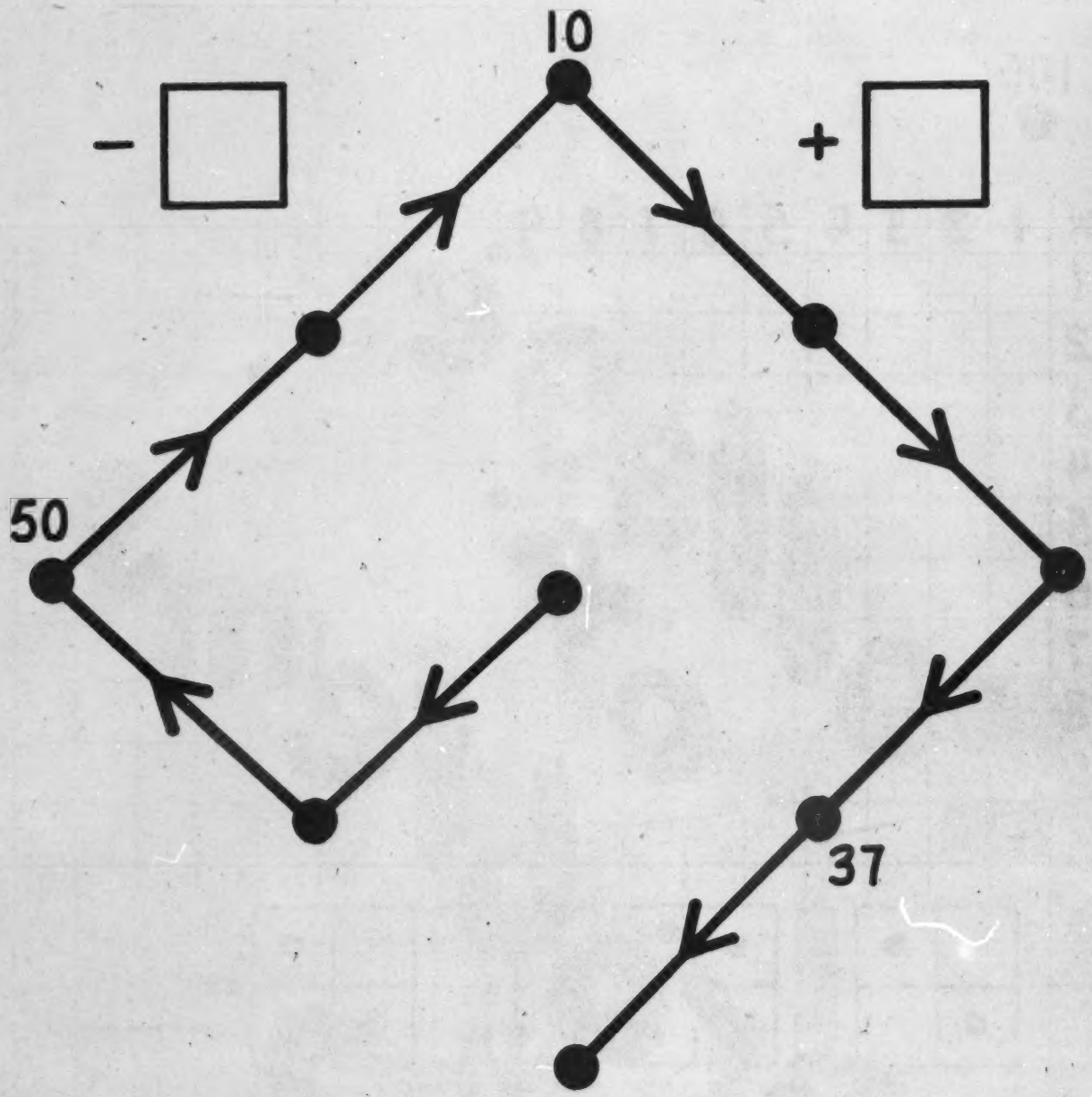





MAY 1 6 1980

Fill in the boxes for the arrows.

Label the dots.



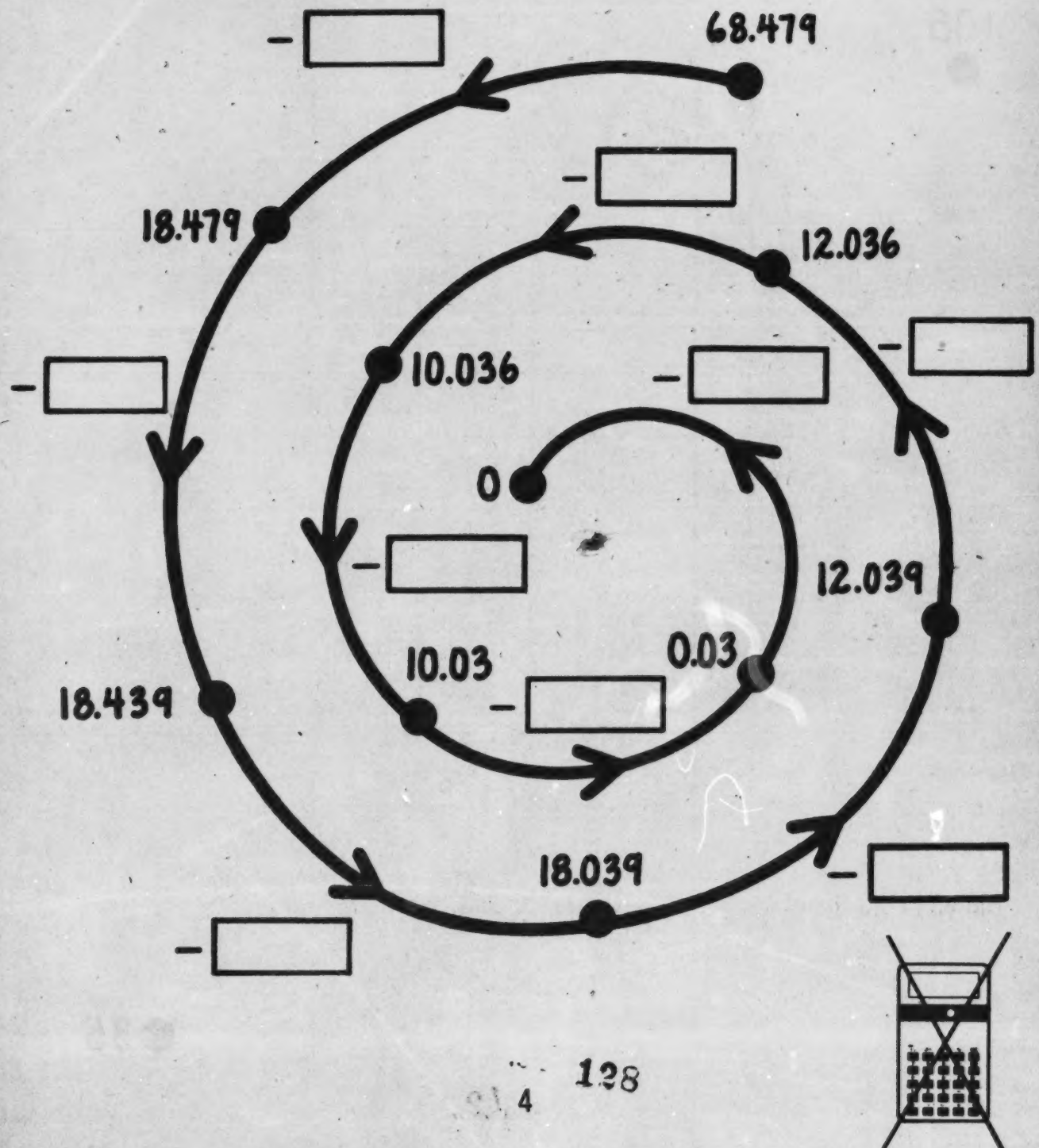
Build a road from 105 to 36. Each arrow must be for $+\square$, $-\square$, $\times\square$, or $\div\square$, where exactly one of the digits: 1, 2, 3, 4, 5, 6, 7, 8, or 9 is in a box. Build as short a road as you can.

105

36

## WIPE - OUT

Fill in the boxes for the arrows.



Find all the places in this table for — where the entry is $^{-}2$.
One is located for you.

| — | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | $^{-}2$ | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |

Did you find the other six places where the entry is $^{-}2$? _____

Fill in each box with " $<$ ", " $>$ ", or " $=$ ". Try to solve these problems without doing any calculation.

$782 + 149 \square 782 + 188$

$621 - 17 \square 621 - 84$

$567 + 138 + 495 \square 316 + 567 + 138$

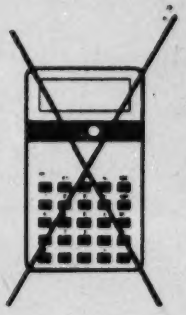
$71 - 25 \square 73 - 27$

$2{,}447 + 828 \square 447 + 2{,}828$

$1{,}143 - 660 \square 1{,}532 - 660$

$\frac{1}{3} \square \frac{1}{8}$

$\frac{5}{7} \square \frac{2}{7}$



## TIMELY QUESTIONS

Show your work in the space provided. You may use a hand-calculator to do the calculations.

1. Lloyd takes a 5 hour and 40 minute bus ride from Chicago to St. Louis to see a football game. If he arrives in St. Louis at 1:30 PM, what time did he leave Chicago? _____ (Don't forget to indicate "AM" or "PM".)

2. Your heart beats about 80 times per minute.
   About how many times does it beat in one day? _____
   one year? _____

Put one of the digits: 0, 1, 2, 3, 4, 5, 6, 7, 8, or 9 in each box to make the calculations correct. You may use a digit more than once.

**Subtract**

$$\begin{array}{r} \square 390 \\ -17\square 8 \\ \hline 3\square 2\square \end{array}$$

**Multiply**

$$\begin{array}{r} \square 83 \\ \times \quad \square \\ \hline 26\square 1 \end{array}$$

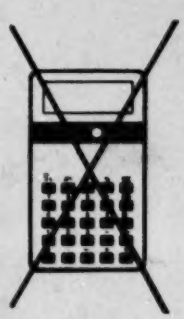
Complete the calculations. Show your work.

**Subtract**

$12{,}802 - 4{,}769$

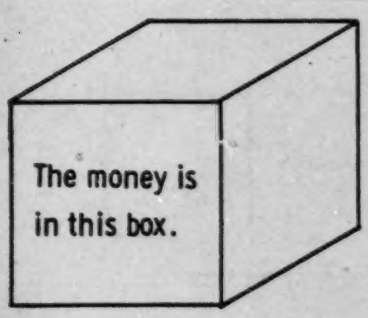
**Multiply**

$$\begin{array}{r} 476 \\ \times 26 \\ \hline \end{array}$$

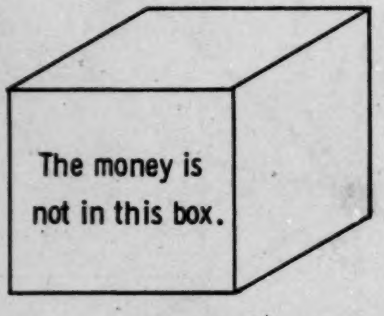


Exactly one of these boxes contains a $100 bill.

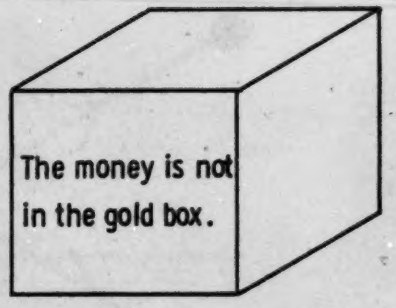
Gold Box




Silver Box




Lead Box

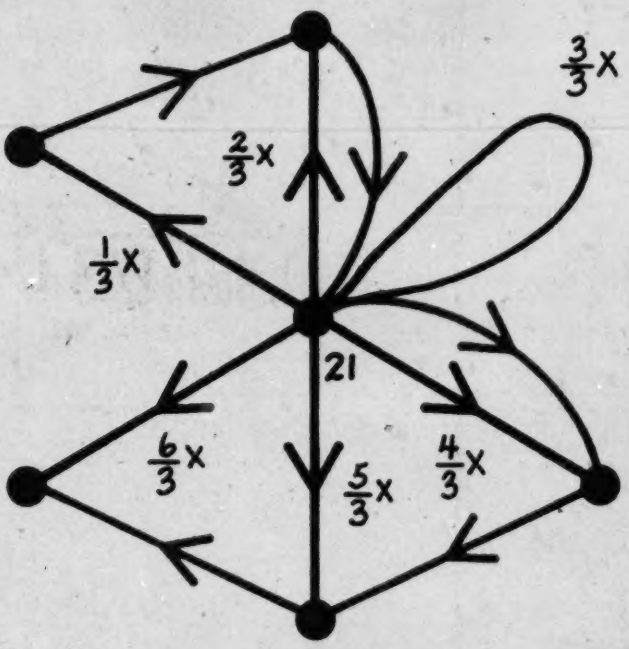



Exactly one of the statements on the boxes is true.

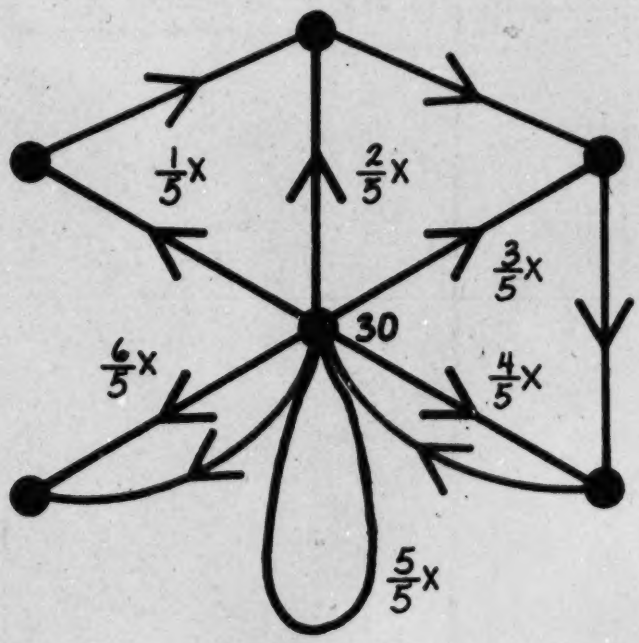
Which box contains the $100 bill? _____

Which box has the true statement written on it? _____

Label the dots and fill in the box for the blue arrows.




+ ☐




+ ☐

Complete these two division calculations.

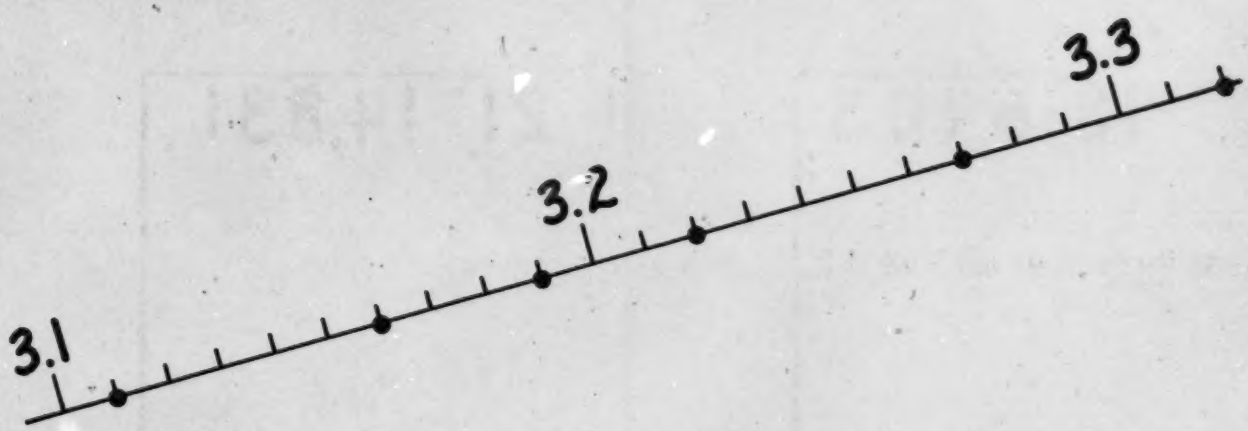
$48\overline{)6{,}403}$

$21\overline{)14{,}831}$

Lim is a secret number.

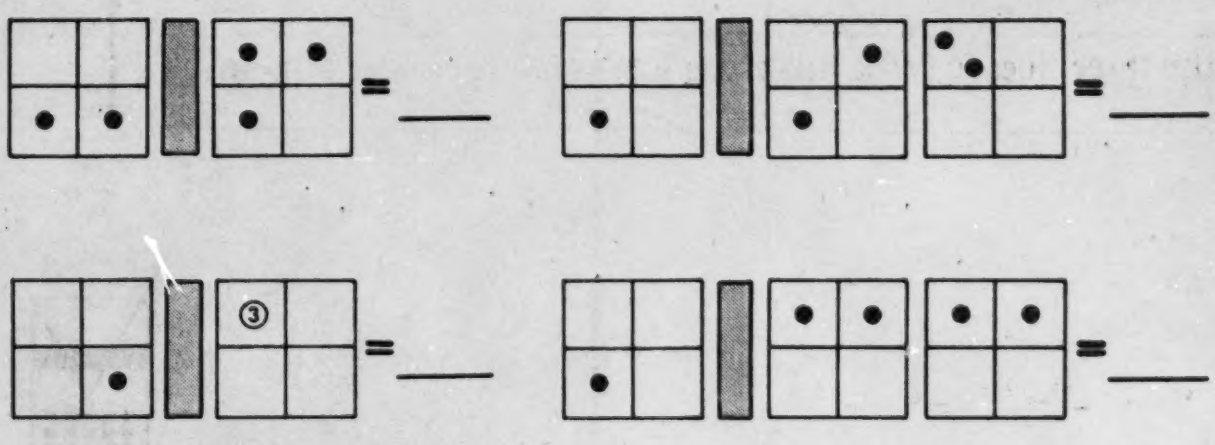
**First clue**

Lim is one of the dots on this number line. Label the dots.



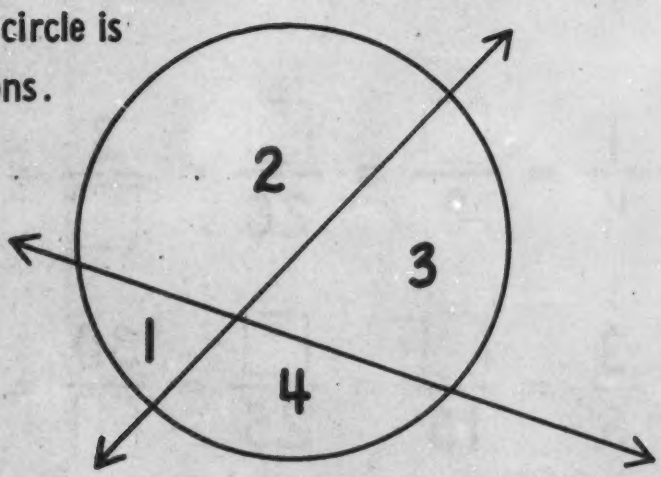

**Second clue**

Lim is one of these numbers.



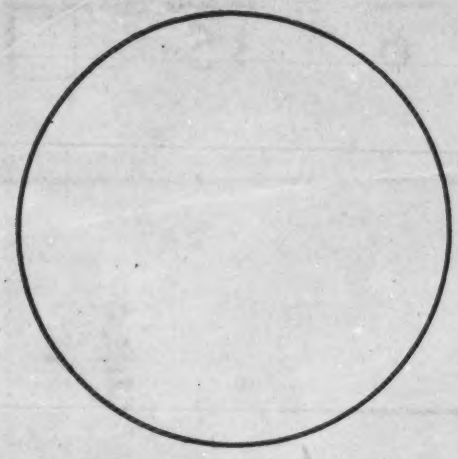

Who is Lim? _____

Using two lines, this circle is divided into four regions.




---

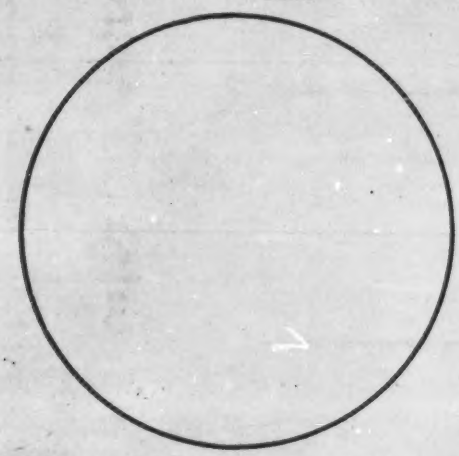
Use <u>three</u> lines to divide this circle into as <u>many</u> regions as you can.



How many regions? _____

---

Use <u>three</u> lines to divide this circle into as <u>few</u> regions as you can.



How many regions? _____

Complete.

$$\frac{1}{4} = \frac{\square}{8} = \frac{\square}{20} = \frac{3}{\square} = \frac{10}{\square}$$

$$\frac{3}{5} = \frac{\square}{15} = \frac{\square}{25} = \frac{30}{\square} = \frac{12}{\square}$$

$$\frac{2}{3} = \frac{\square}{6} = \frac{\square}{15} = \frac{8}{\square} = \frac{40}{\square}$$

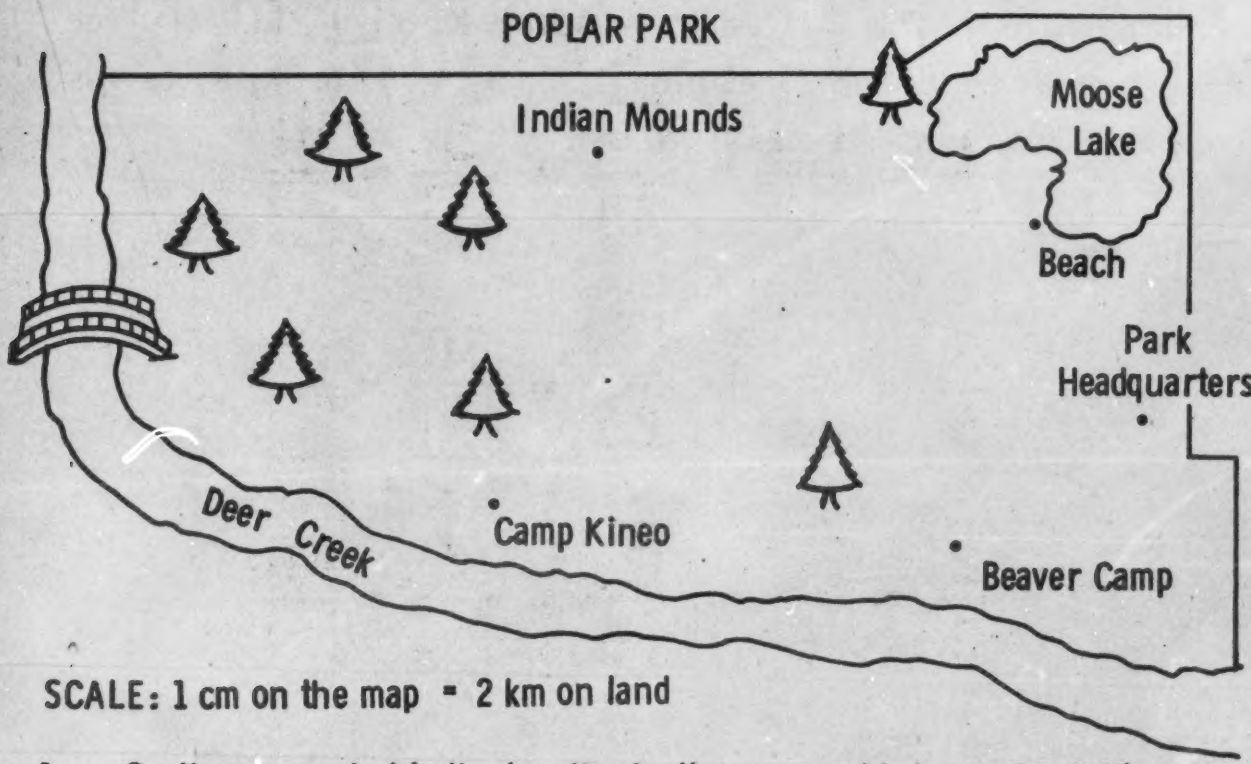
---

Complete.

$\frac{3}{5} + \frac{1}{4} =$ _____ $\frac{3}{5} - \frac{1}{4} =$ _____

$\frac{2}{3} + \frac{3}{5} =$ _____ $\frac{2}{3} - \frac{3}{5} =$ _____

$\frac{2}{3} + \frac{1}{4} =$ _____ $\frac{2}{3} - \frac{1}{4} =$ _____




SCALE: 1 cm on the map = 2 km on land

1. On the map, what is the length of a line segment between Camp Kineo and Moose Lake Beach? _____ cm
   What is the real distance between Camp Kineo and Moose Lake Beach?
   _____ km

2. On the map, what is the length of a line segment between Beaver Camp and Park Headquarters? _____ cm
   What is the real distance from Park Headquarters to Beaver Camp? ____km

3. If a hiker walks 4 km in one hour, how long should she take to walk from Camp Kineo to Moose Lake Beach? _____
   From Moose Lake Beach to the Indian Mounds? _____

4. Hogback Cave in Poplar Park is 6 km from Camp Kineo and 14 km from Beaver Camp. Find the location of Hogback Cave, draw a dot, and label it.

Build a road from $^{-}15$ to 30. Each arrow must be for $+\square$, $-\square$, $\times\square$, or $\div\square$, where exactly one of the digits: 1, 2, 3, 4, 5, 6, 7, 8, or 9 is in a box. Build as short a road as you can.

$^{-}15$ ●

● 30

## A PAIR OF PROBLEMS

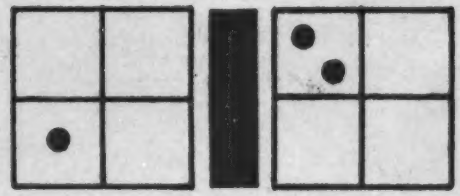
1. There are 120 sixth graders in Jackson Middle School. If there are 12 more girls than boys in the sixth grade, how many girls are there? _____ boys? _____

2. On a summer day in Tuscaloosa, there are 9 hours more of daylight than of darkness. On that day, how many hours of daylight are there? _____ of darkness? _____

Zim is a secret number.

First clue

Zim can be put on this Minicomputer by adding one regular positive checker.

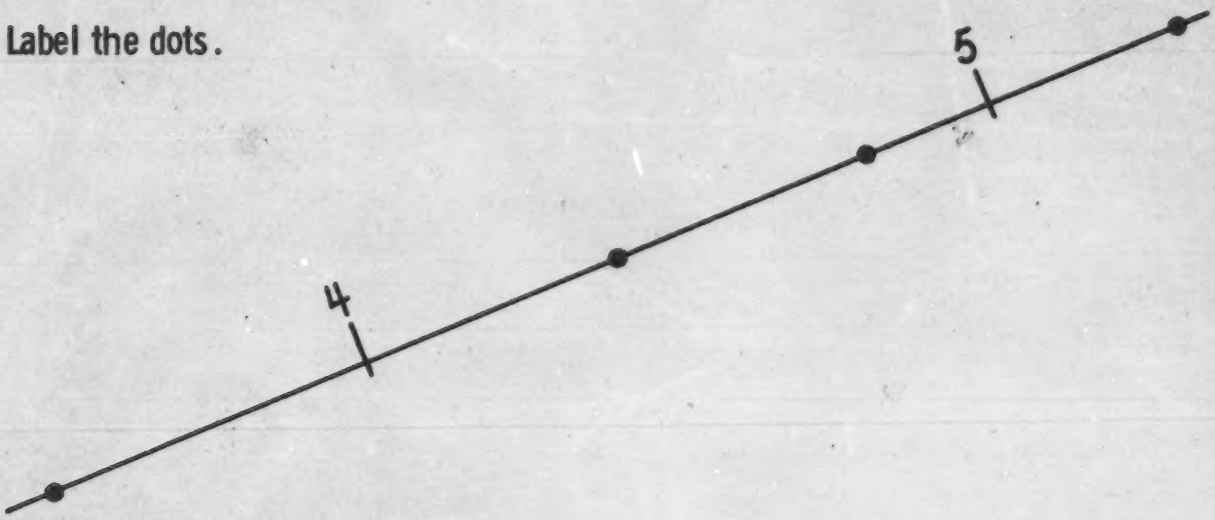


Zim could be ____, ____, ____, ____, ____, ____, ____, or ____.

Second clue

Zim is one of the dots on this number line. (You may use a ruler if you wish.)

Label the dots.

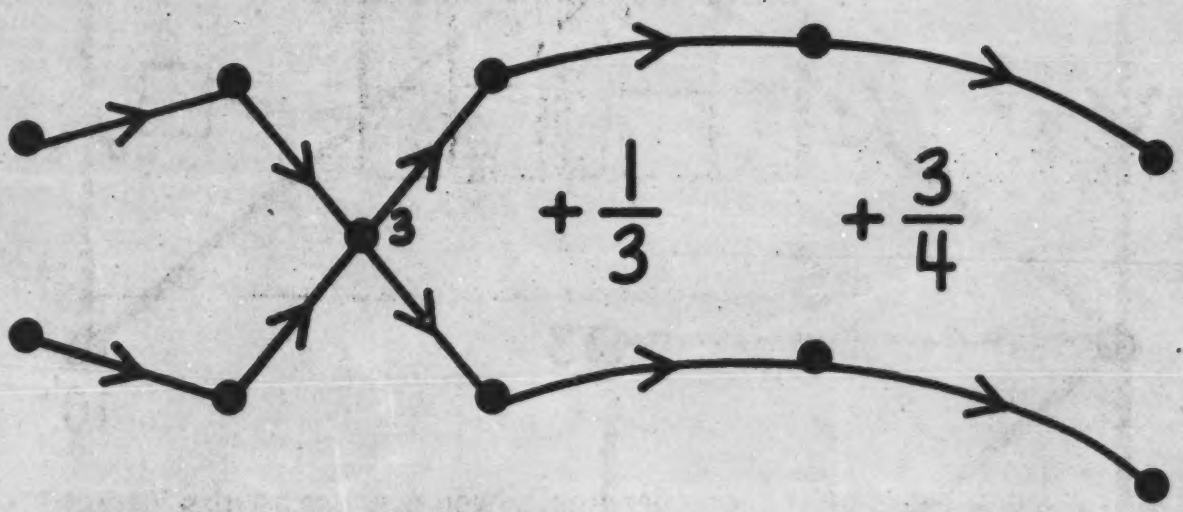



Who is Zim? _____

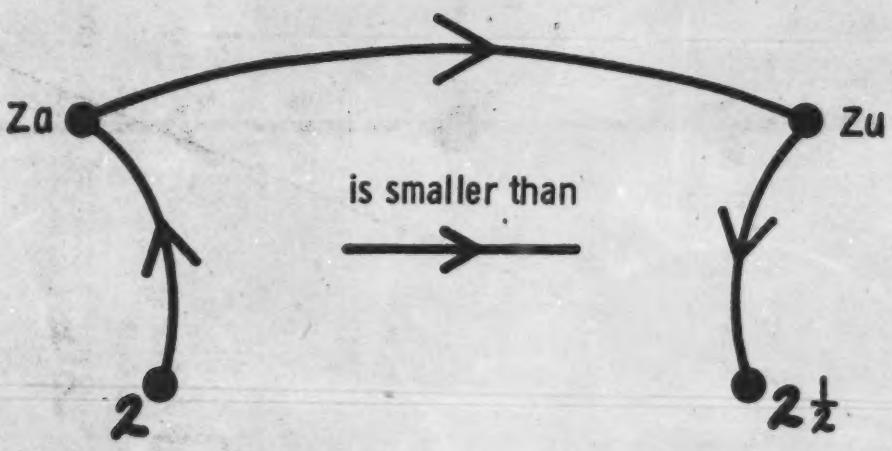
Za and Zu are secret numbers.

**First clue**

Za and Zu are in this arrow picture. Label the dots.

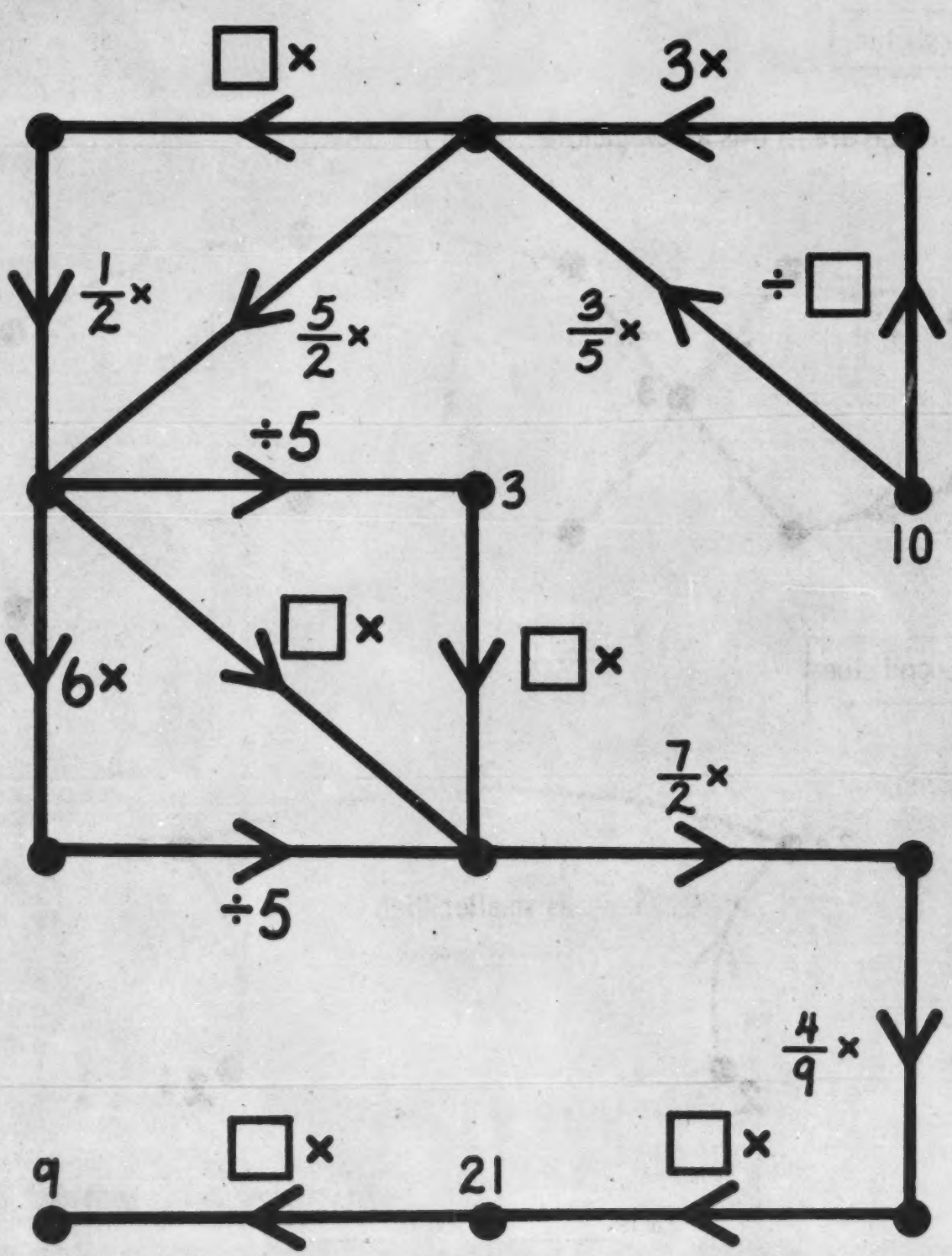



**Second clue**




Za is _____. Zu is _____.

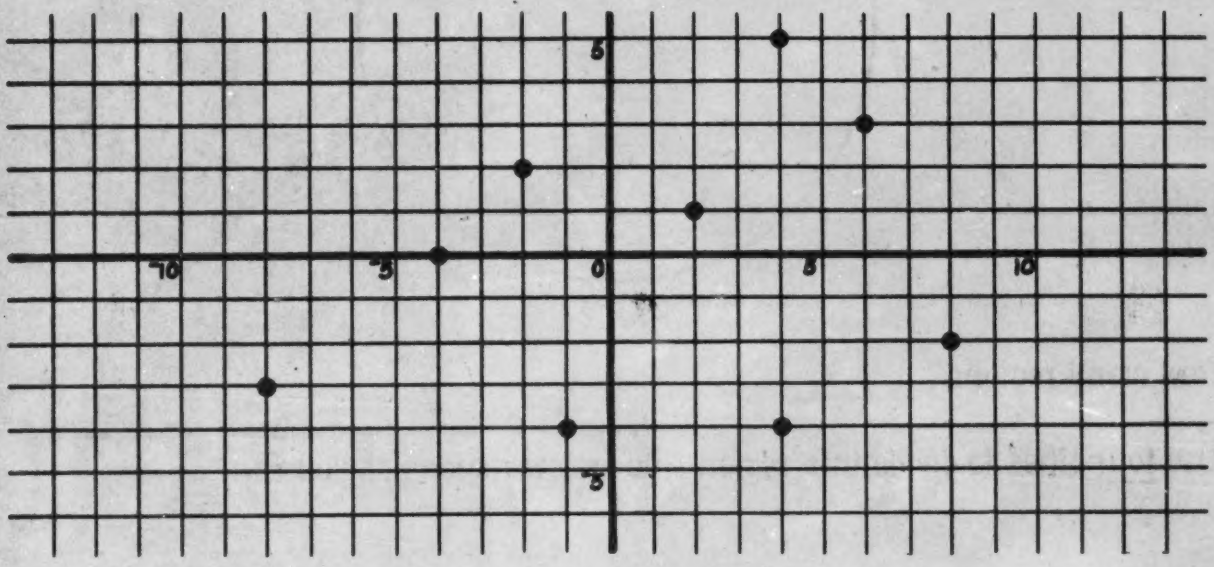
Label the dots and fill in the boxes for the arrows.



Eks and Zee are secret numbers.

**First clue**

(Eks, Zee) is one of the dots on this grid picture. You do not have to label the dots.

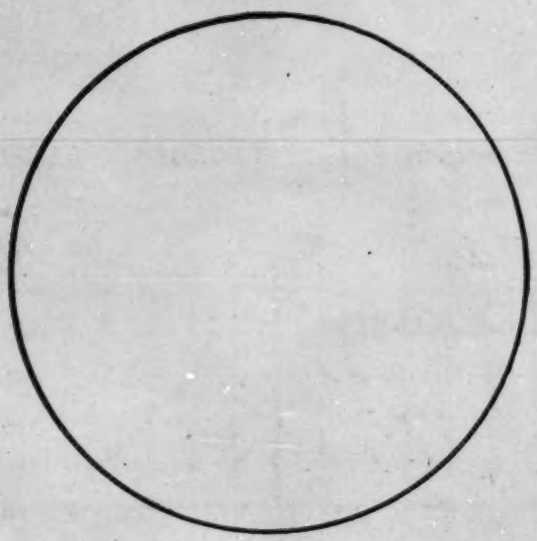



**Second clue**

| T< | Zee | 3 |
|---|---|---|
| Eks | 1 | 1 |
| -1 | 0 | 1 |

(Eks, Zee) is (____, ____).

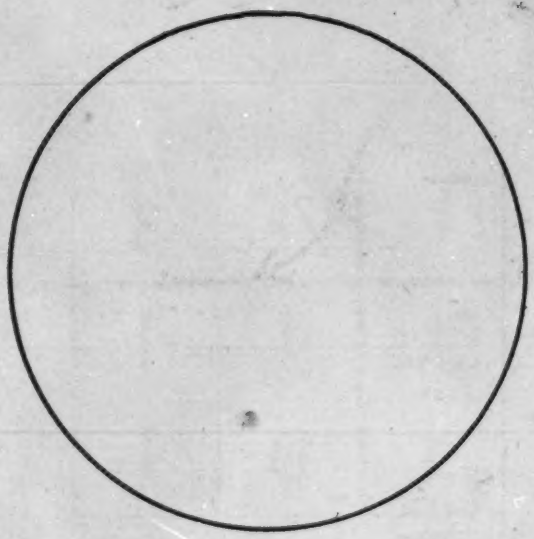
Use four lines to divide this circle into as many regions as you can.



How many regions? _____

---

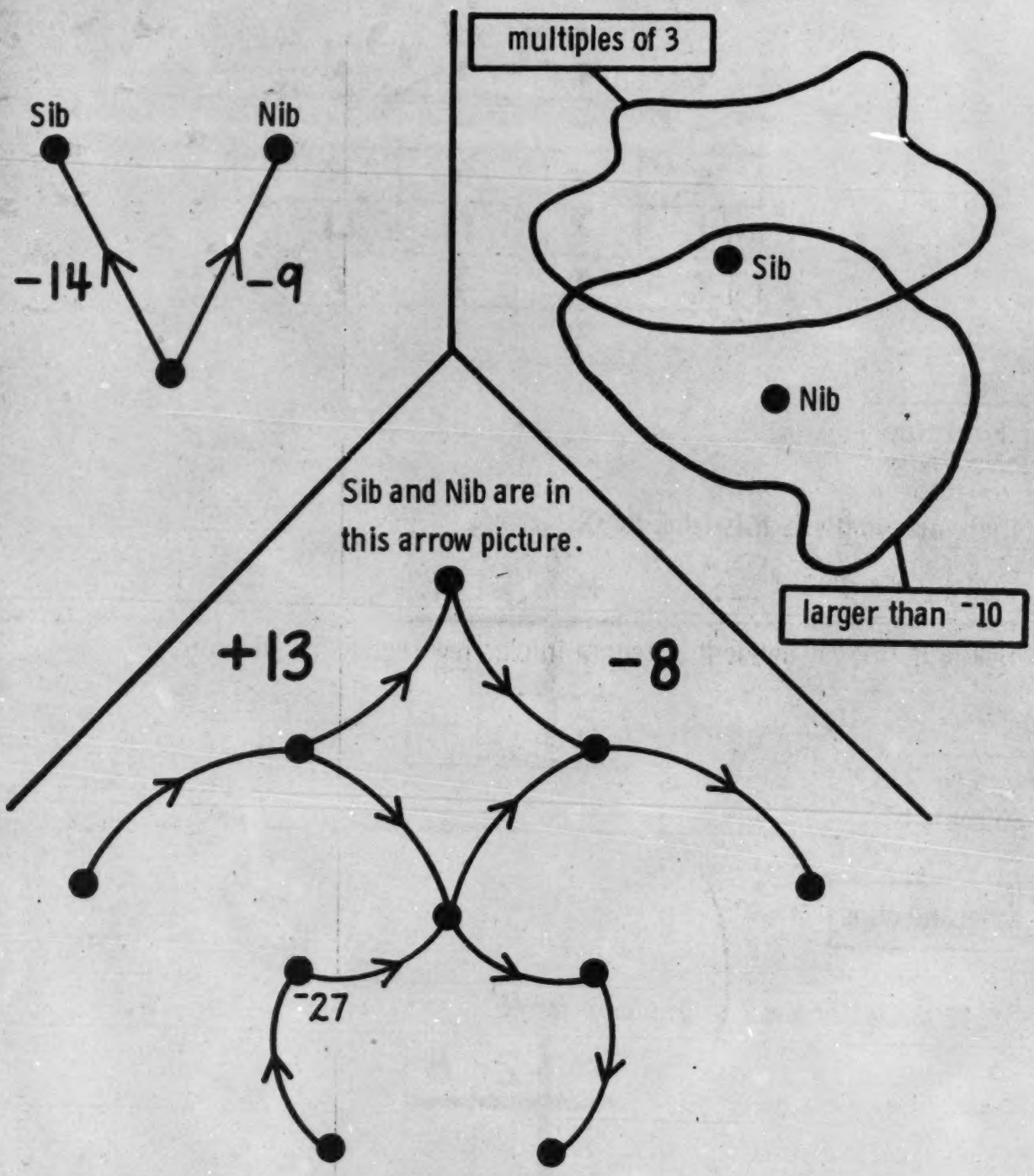
Use four lines to divide this region into as few regions as you can.



How many regions? _____

Sib and Nib are secret numbers.




Sib is _____. Nib is _____.



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$*$ is for one of these operations.

THE TABLE GAME

| | | | |
|---|---|---|---|
| $+$ | $+_3$ | $+_4$ | $+_{10}$ |
| $-$ | $-_3$ | $-_4$ | $-_{10}$ |
| $\times$ | $\times_3$ | $\times_4$ | $\times_{10}$ |
| $\cdot$ $\uparrow$ | $\downarrow$ | $\sqcap$ | $\sqcup$ |
| $T_D$ | $T_M$ | $T_<$ | $T_>$ |
| | $T_{-3}$ | $T_{-4}$ | |

**First clue**

There are no 0's is this table for $*$.

| $*$ | 5 | 11 |
|---|---|---|
| 7 | | |
| 5 | | |

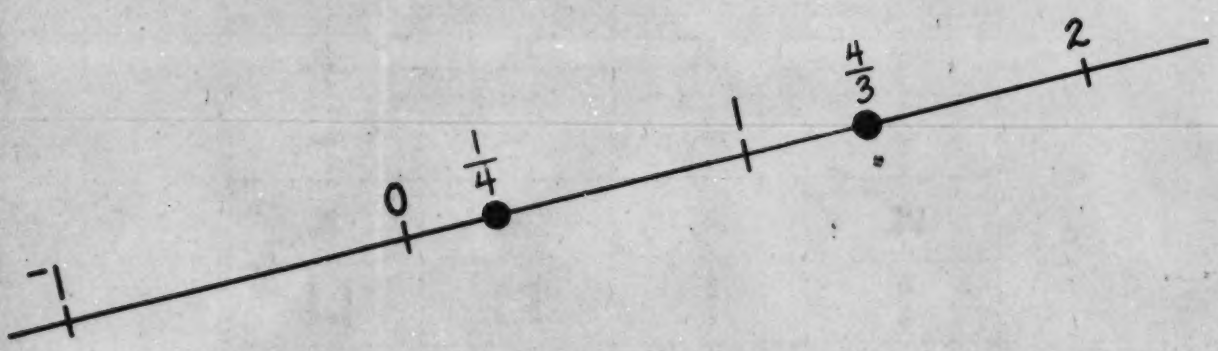
$*$ could be ___, ___, ___, ___, ___, ___, ___, ___, or ___.

**Second clue**

There is exactly one 2 in this table for $*$.

| $*$ | 2 | 6 |
|---|---|---|
| 4 | | |
| 7 | | |

$*$ is _____.




**Complete the tables and circle the entries that belong to the blue segment.**

| + | $\frac{1}{2}$ | $\frac{3}{4}$ |
|---|---|---|
| $\frac{3}{4}$ | | |
| $\frac{4}{5}$ | | |
| $\frac{2}{5}$ | | |

| − | $\frac{1}{2}$ | $\frac{3}{4}$ |
|---|---|---|
| $\frac{3}{4}$ | | |
| $\frac{4}{5}$ | | |
| $\frac{2}{5}$ | | |

Each table is for one of these operations.

THE TABLE GAME

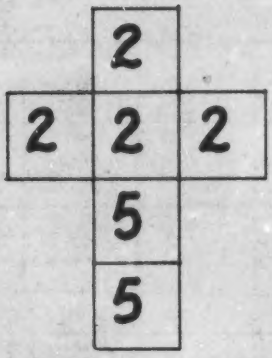
| | | | |
|---|---|---|---|
| $+$ | $+_3$ | $+_5$ | $+_{10}$ |
| $-$ | $-_3$ | $-_5$ | $-_{10}$ |
| $\times$ | $\times_3$ | $\times_5$ | $\times_{10}$ |
| $\uparrow$ | $\downarrow$ | $\sqcap$ | $\sqcup$ |
| $T_D$ | $T_M$ | $T_<$ | $T_>$ |
| | $T_{-2}$ | $T_{-4}$ | |

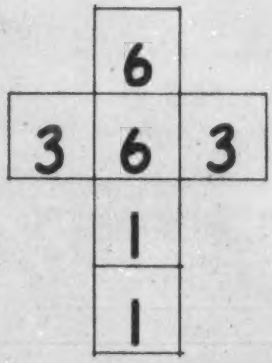
Label the tables.

| | 9 | 11 |
|---|---|---|
| 5 | ~~2~~ | 1 |
| 12 | ~~×~~ | ~~0~~ |

| | 8 | 14 |
|---|---|---|
| 25 | ~~7~~ | 1 |
| 6 | ~~2~~ | 2 |

These are the maps of two number cubes.



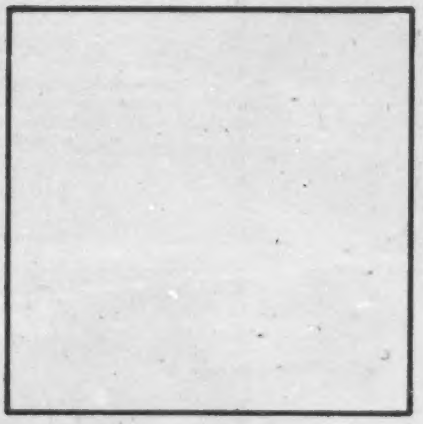




Roger and Beth play a game with these two cubes; higher number wins. Roger rolls the red cube and Beth rolls the blue cube.

Use this square to calculate the probability that Roger rolls the higher number.

● Roger wins

● Beth wins



What is Roger's probability of winning? _____

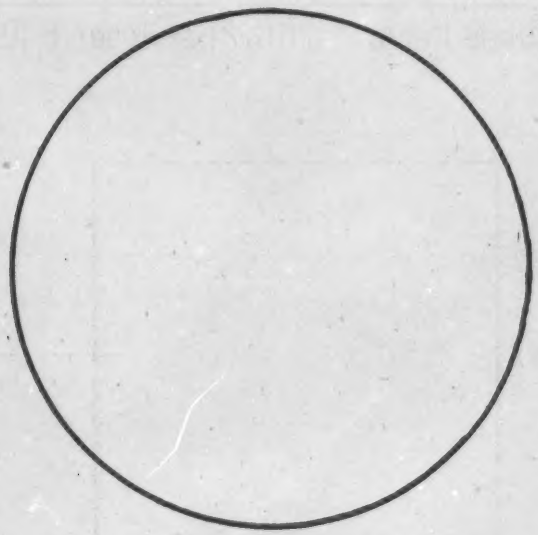
Who is favored in this game, Roger or Beth? _____

Ask your teacher to check your answers on pages 13 and 22. Use correct answers to fill in the boxes in this table:

| Number of line segments | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Maximum number of regions | 4 | ☐ | ☐ | | |

Do you see a pattern? _____ Predict the largest number of regions into which you can divide a circle using <u>five</u> line segments. _____

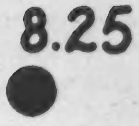
Check your prediction by using <u>five</u> line segments to divide this circle into as many regions as you can.



How many regions? _____ Was your prediction correct? _____

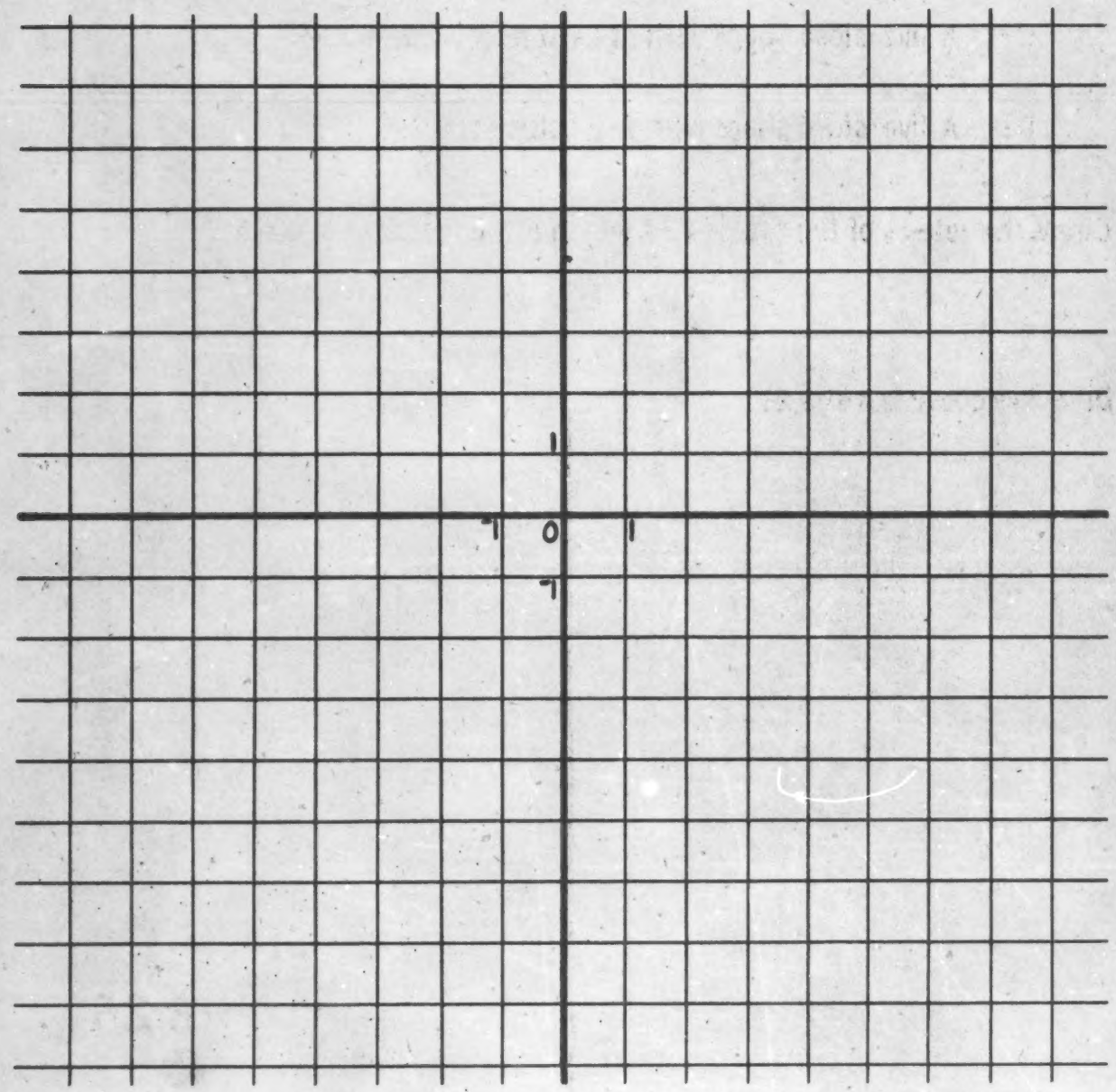
Using the same pattern, predict the largest number of regions into which you could divide a circle using <u>six</u> line segments? _____

Build a road from 1.3 to 8.25. Each arrow must be for $+\square$, $-\square$, $\times\square$, or $\div\square$, where exactly one of the digits: 1, 2, 3, 4, 5, 6, 7, 8, or 9 is in a box. Use at most four arrows.



# Lin + Lon $< -3$

**Shade a region on the grid to indicate all couples that (Lin, Lon) could be.**



It is impossible to make two of these shapes (without dents).

A: A triangle with at least two right angles.

B: A five-sided shape with exactly one right angle and at least two acute angles.

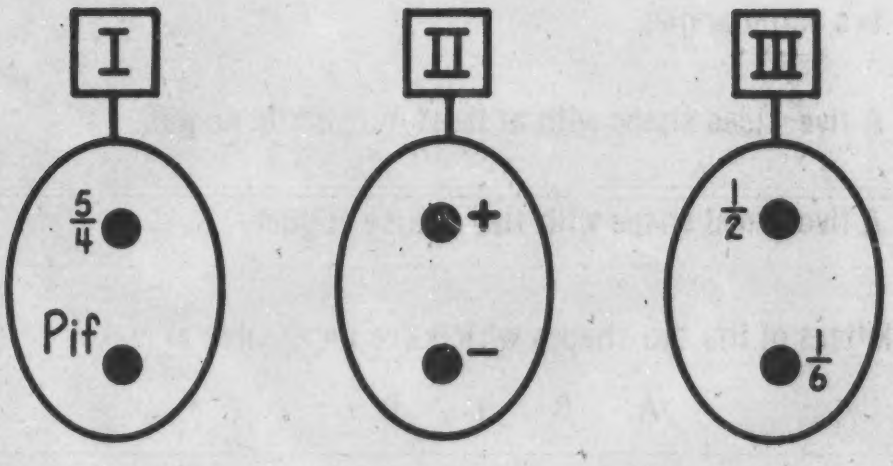
C: A five-sided shape with at least four acute angles.

D: A five-sided shape with five obtuse angles.

Circle the letters of the two shapes which are impossible to make.

A B C D

Draw the other two shapes.




One symbol is chosen at random from each string to form the name of a number, for example, "$\frac{5}{4} - \frac{1}{6}$". Choose Pif to make the probability that the number named is in the blue segment exactly $\frac{1}{2}$.

You may use the tables below to help you find who Pif could be. Many solutions are possible.

| + | $\frac{1}{2}$ | $\frac{1}{6}$ |
|---|---|---|
| $\frac{5}{4}$ | | |
| Pif | | |

| − | $\frac{1}{2}$ | $\frac{1}{6}$ |
|---|---|---|
| $\frac{5}{4}$ | | |
| Pif | | |

Pif could be _____.

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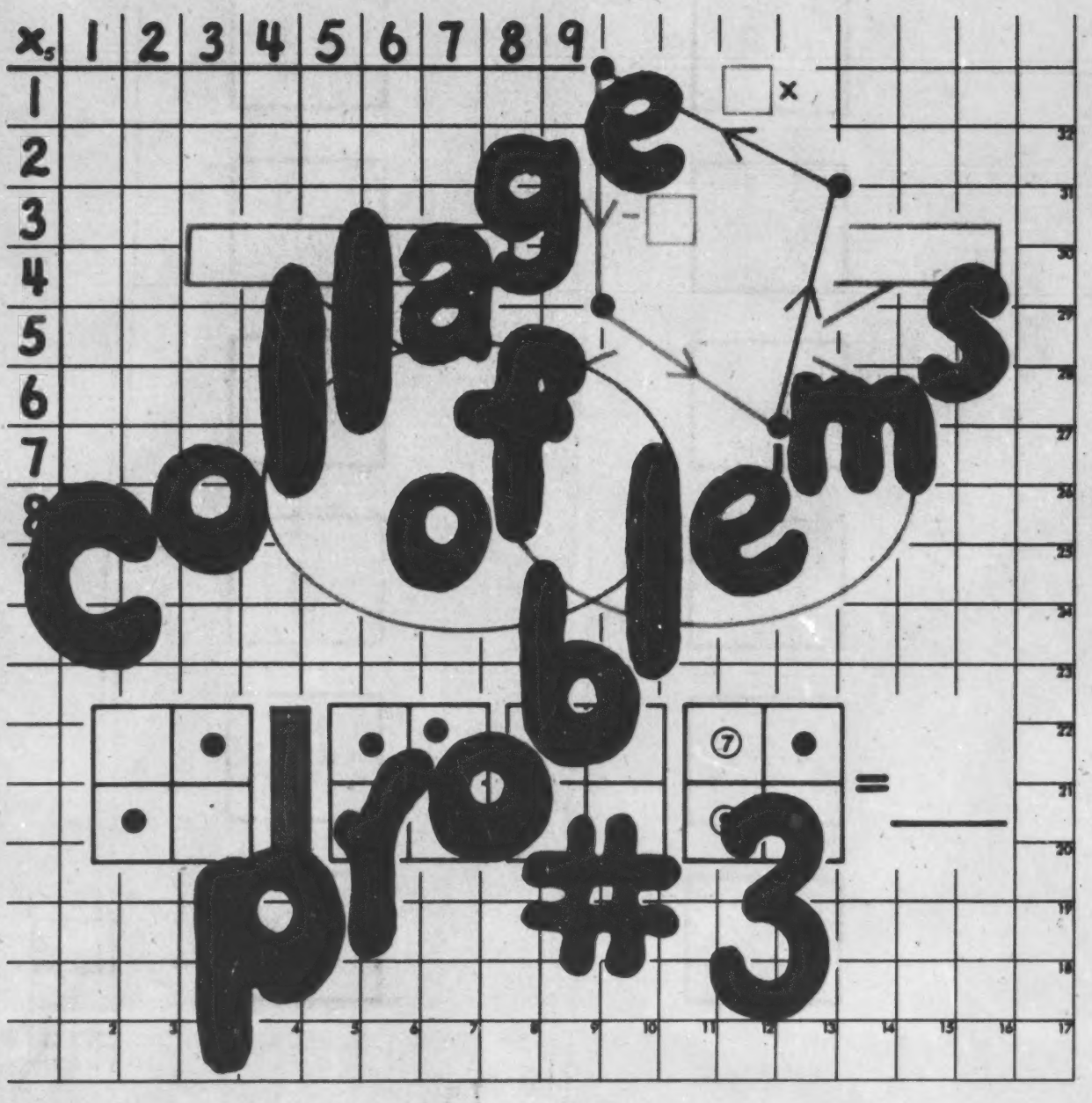
Name _____

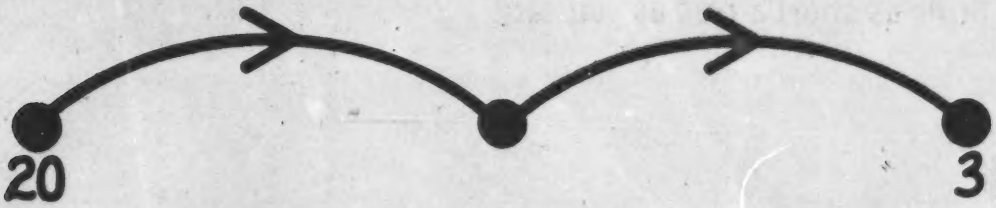
6-39801



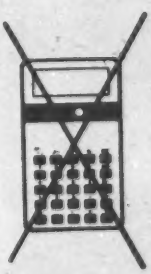



MAY 1 6 1980

Pair the tags.




| | |
|---|---|
| $-8$ | $+5$ |
| $\frac{1}{2}\times$ | $\div 4$ |
| $\frac{1}{5}\times$ | $+13$ |
| $3\times$ | $-57$ |
| $-22$ | $-1$ |
| $-30$ | $-7$ |



Build a road from 7 to 210. Each arrow must be for $+\square$, $-\square$, $\times\square$, or $\div\square$, where exactly one of the digits: 1, 2, 3, 4, 5, 6, 7, 8, 9 is in a box. Build as short a road as you can.

All these calculations are correct, except that a decimal point is missing in each answer. Place a decimal point in each answer to make a true number story.

$$787.6 + 35.87 = 82347$$

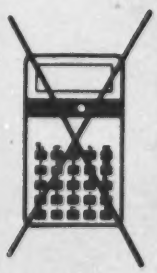
$$613.82 + 492.48 = 11063$$

$$86.15 - 12.483 = 73667$$

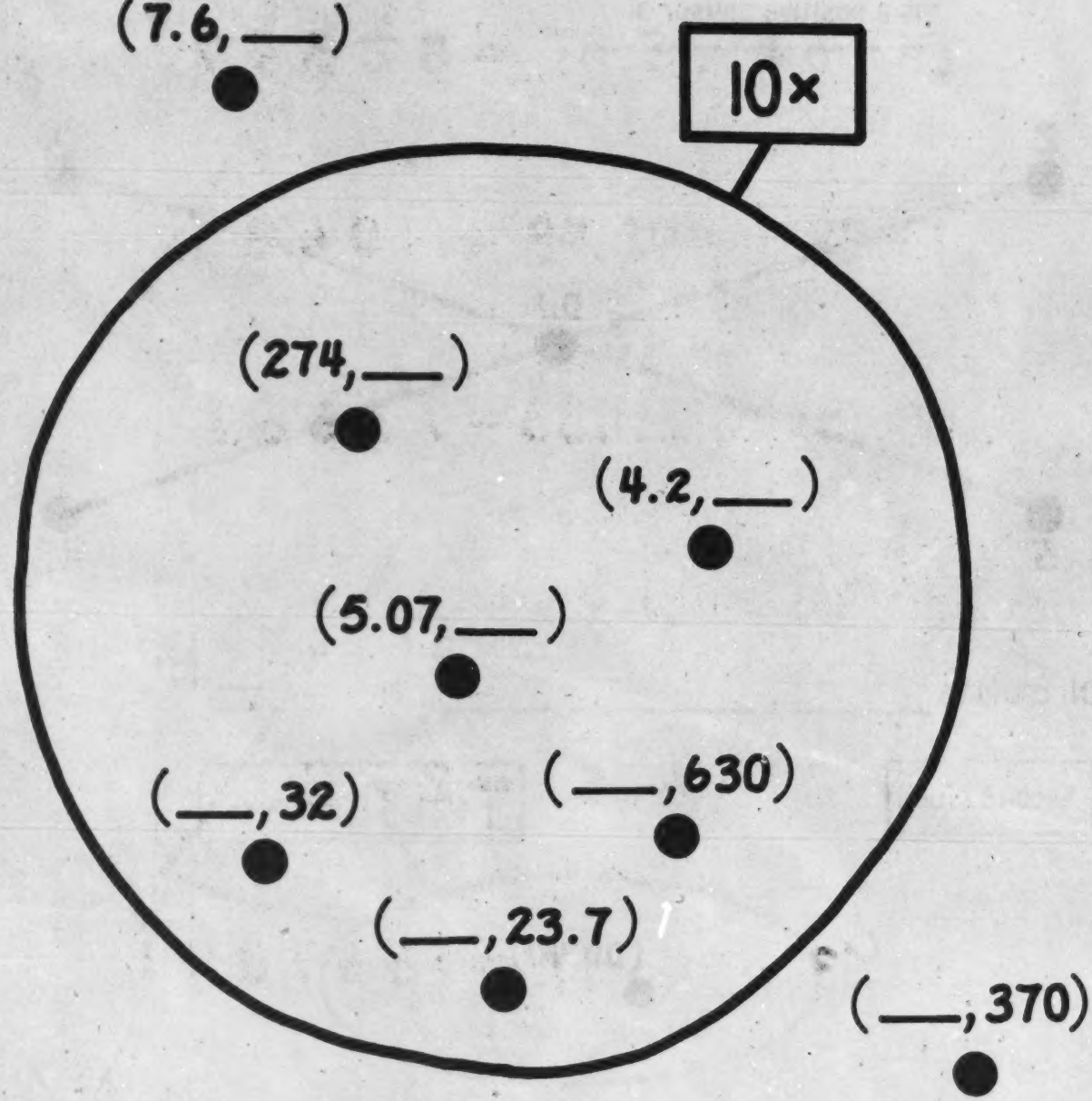
$$420.36 - 381.76 = 386$$

$$6.2 \times 4.5 = 279$$

$$31.53 \times 4.97 = 1567041$$

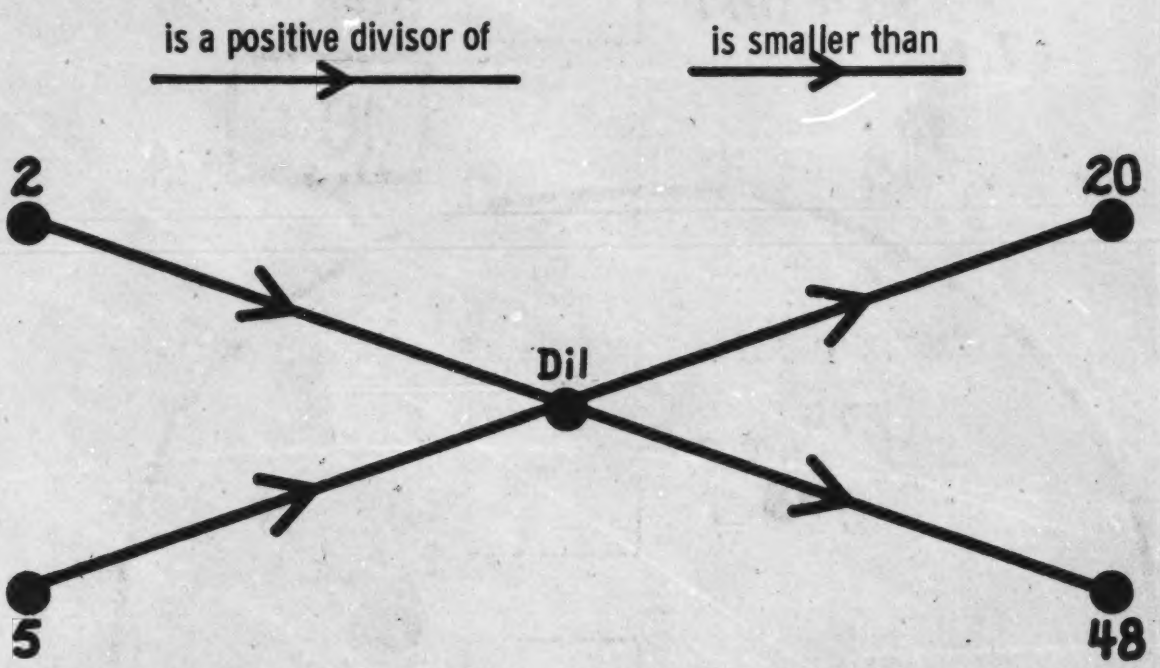


Fill in the blanks.



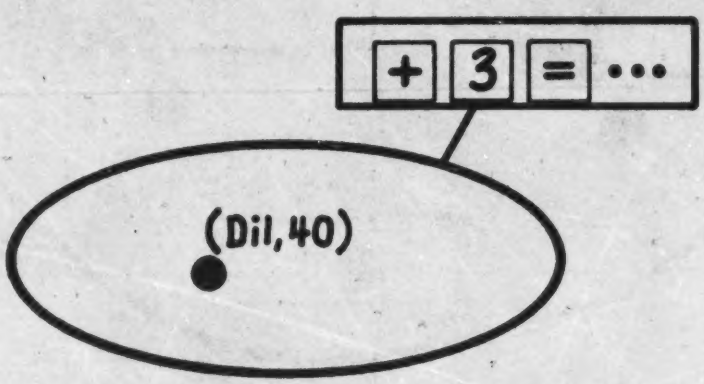
Dil is a secret whole number.

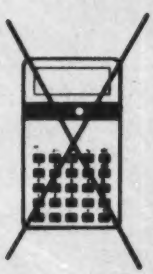
**First clue**




Dil could be _____, _____, _____, or _____.

**Second clue**



Dil is _____. 162

Fill in each box with " < ", " > ", or " = ". Try to solve these problems without doing any calculation.

$736 + 587$ ☐ $587 + 426$

$1{,}018 - 650$ ☐ $1{,}018 - 200$

$500 + 700$ ☐ $520 + 680$

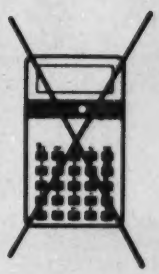
$82 \div 7$ ☐ $82 \div 3$

$70 \times 36$ ☐ $7 \times 360$

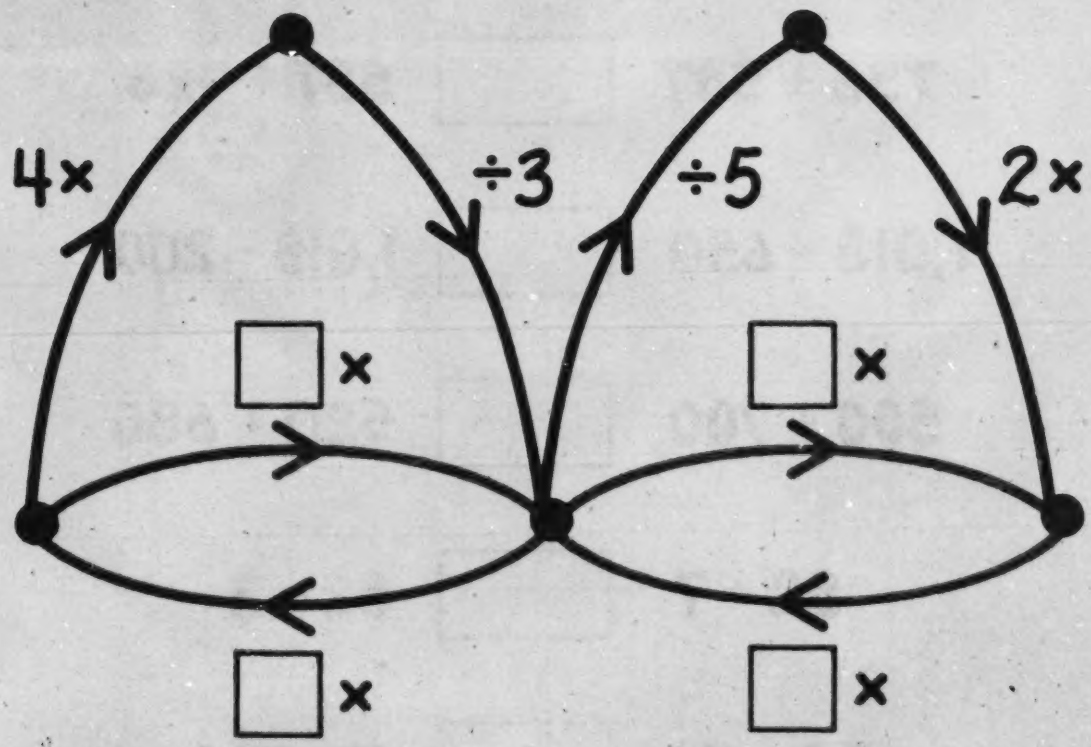
$58 \times 67$ ☐ $71 \times 58$

$\frac{2}{3}$ ☐ $\frac{2}{5}$

$\frac{3}{2}$ ☐ $\frac{5}{2}$



Fill in the boxes for the arrows.




Complete these calculations.

$\frac{4}{3} \times 12 =$ ___

$\frac{2}{5} \times 20 =$ ___

$\frac{3}{4} \times 12 =$ ___

$\frac{5}{2} \times 20 =$ ___

Find all of the places in this table for ↑ where the entry is 4 and find all the places where the entry is 7. One of each is located for you.

| ↑ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |
| 2 | | | | 4 | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 7 | | | | | 7 | | | | |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |

1. When a printer prints the page numbers of a 100 page book, how many "9"'s are printed? _____

When a printer prints the page numbers of a 1,000 page book, how many "9"'s are printed? _____

2. Shawn and Vicki Rogers ran in The Tri-City Marathon. Shawn took 2 hours and 40 minutes to complete the race and Vicki took 2 hours and 57 minutes. If Shawn finished the race at 1:10 PM, what time did he start? _____

If Vicki started at the same time as Shawn, what time did Vicki finish?

_____

Fill in the boxes with these numbers.

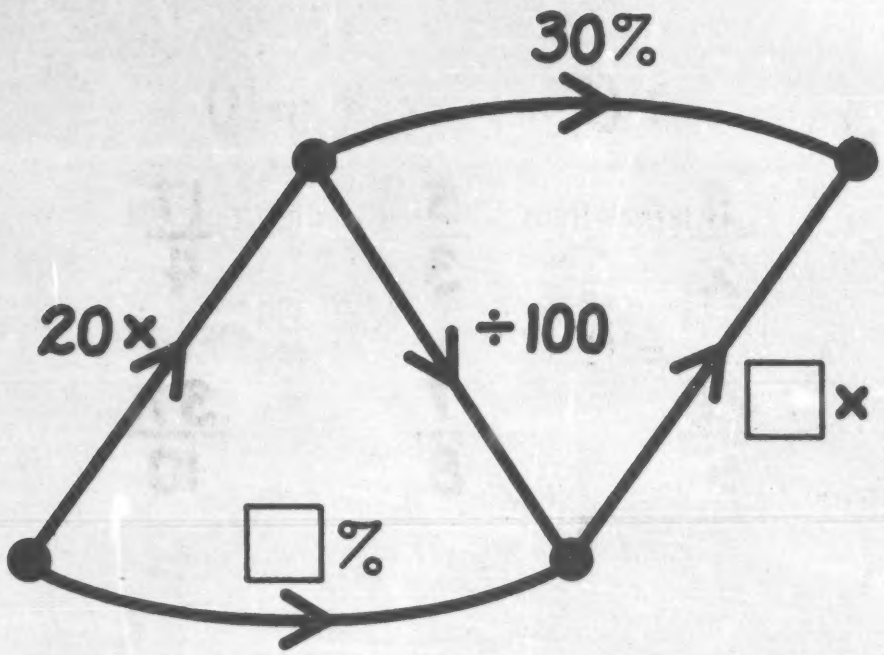
$\frac{5}{2}$ $\frac{5}{3}$ $\frac{17}{4}$

$\frac{28}{5}$ $\frac{7}{8}$ $\frac{37}{10}$

$0 < \square < 1 < \square < 2 < \square < 3$

$3 < \square < 4 < \square < 5 < \square < 6$

Fill in the boxes for the arrows.




Complete.

30 % of 30 = □

30 % of □ = 30

30 % of 40 = □

20 % of □ = 30

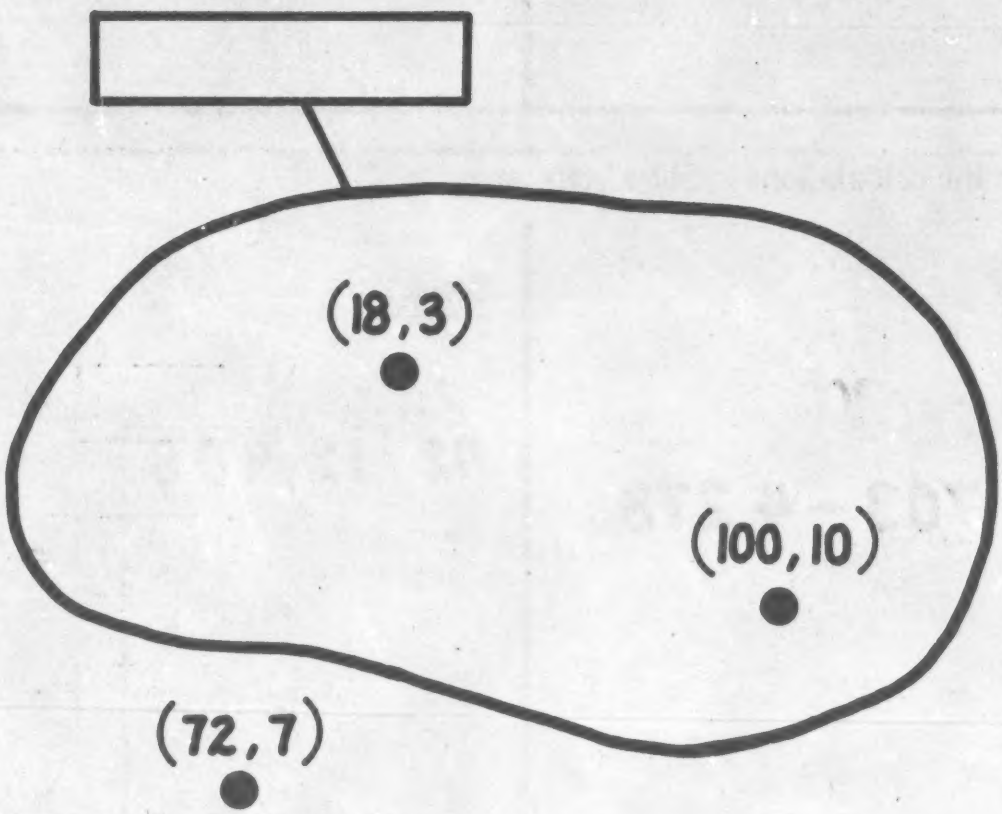
20 % of 40 = □

20 % of □ = 15

The red string is for one of these relations.

| ÷6 | ÷10 |
| --- | --- |
| is larger than | is a multiple of |
| − 2 = ••• | − 5 = ••• |

Label the string.



Put one of the digits: 0, 1, 2, 3, 4, 5, 6, 7, 8, or 9 in each box to make the calculations correct. You may use a digit more than once.

**Subtract**

$$\begin{array}{r} 2\square743 \\ -\,8\square\square7 \\ \hline 14071 \end{array}$$

**Divide**

$$\begin{array}{r} \square\square \text{ R} = \square\square \\ 67\overline{)1553} \\ -\,\square\square\square0 \quad \square0 \\ \hline \square1\square \\ -\,2\square\square \quad \square \\ \hline \square\square \quad \square\square \end{array}$$

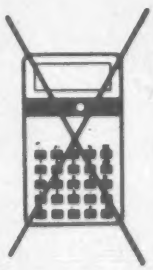
Complete the calculations. Show your work.

**Subtract**

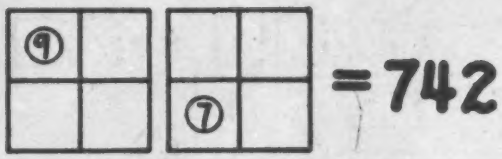
$$4{,}703 - 4{,}278$$

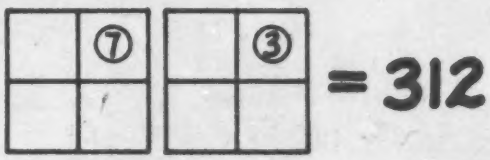
**Divide**

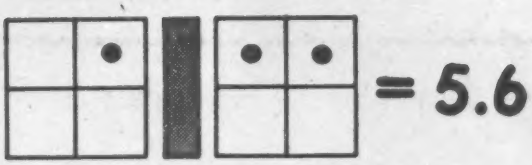
$$42\overline{)12{,}908}$$

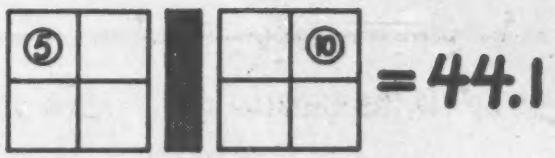


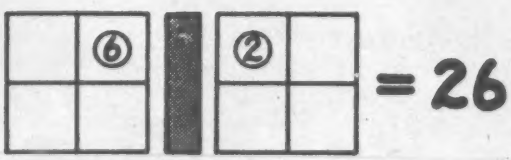
Put each number on the Minicomputer by adding exactly one regular positive checker.

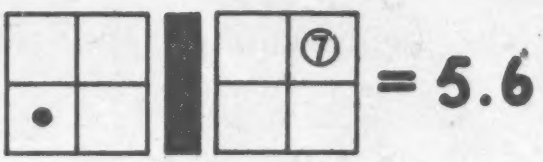


SCALE: 1 cm = 250 km

1. Find the length of a line segment and the real distance between each pair of cities.

| | Line Segment | Real Distance |
|---|---|---|
| Los Angeles - Chicago | _____ cm | _____ km |
| Chicago - New York | _____ cm | _____ km |

2. If an airplane flies 400 km in one hour, what is the flying time from Los Angeles to Chicago? (Circle the closest answer.)

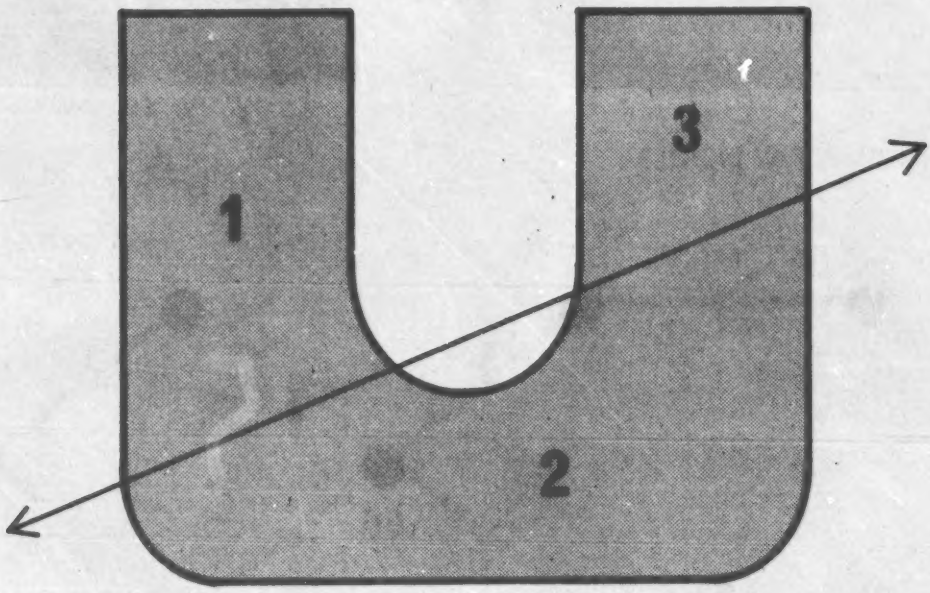
3 hours  5 hours  7 hours  9 hours

. . . from Chicago to New York? (Circle the closest answer.)

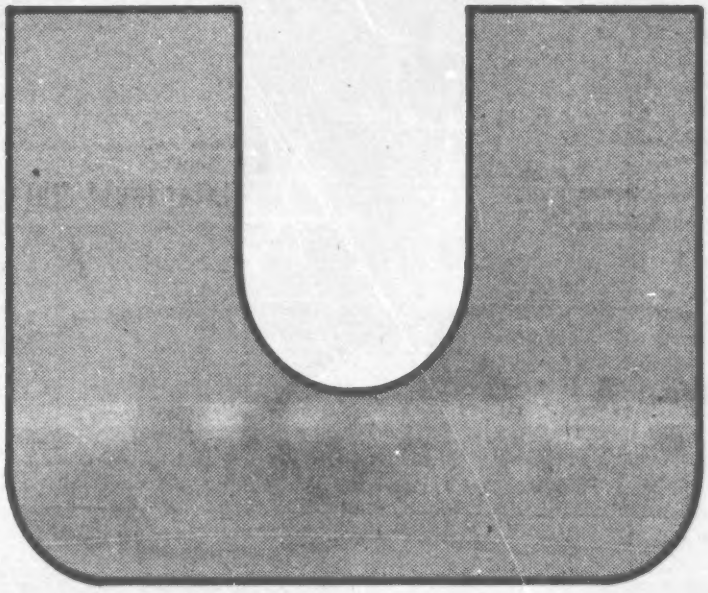
$1\frac{1}{4}$ hours  $2\frac{3}{4}$ hours  $3\frac{1}{2}$ hours  $4\frac{1}{2}$ hours

3. The city, Truth or Consequences, is 1,000 km from Los Angeles and is in the United States. Using a compass, indicate in red the places where Truth or Consequences could be.

Using one line, this shape is divided into three regions.




Use <u>two</u> lines to divide this shape into as many regions as you can.

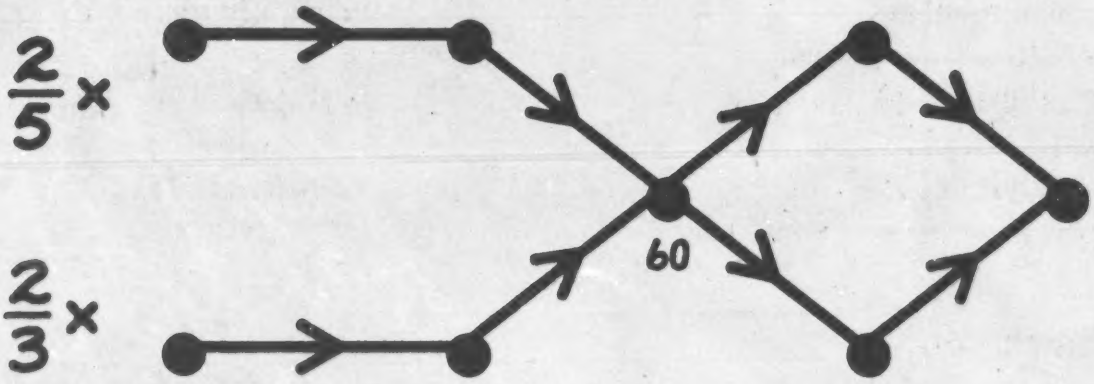


How many regions? _____

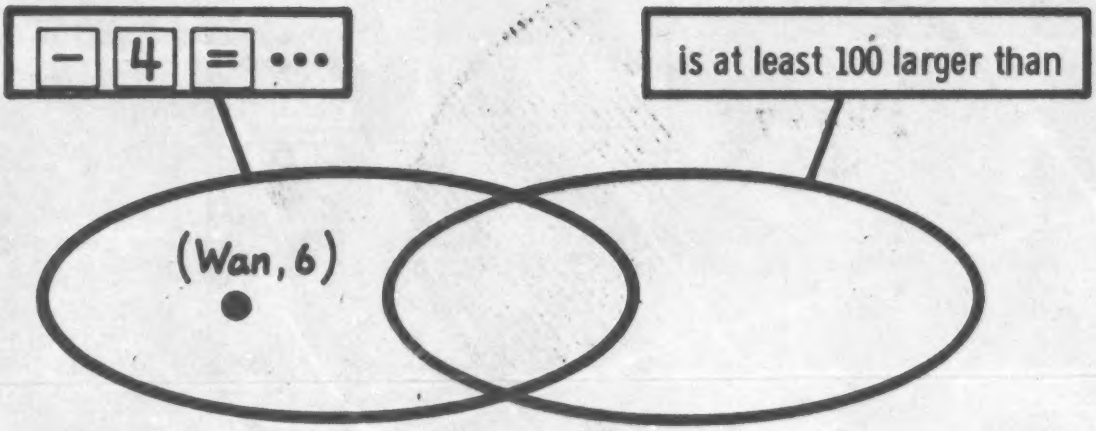
Wan is a secret number.

**First clue**

Wan is in this arrow picture.




**Second clue**




Wan is _____.

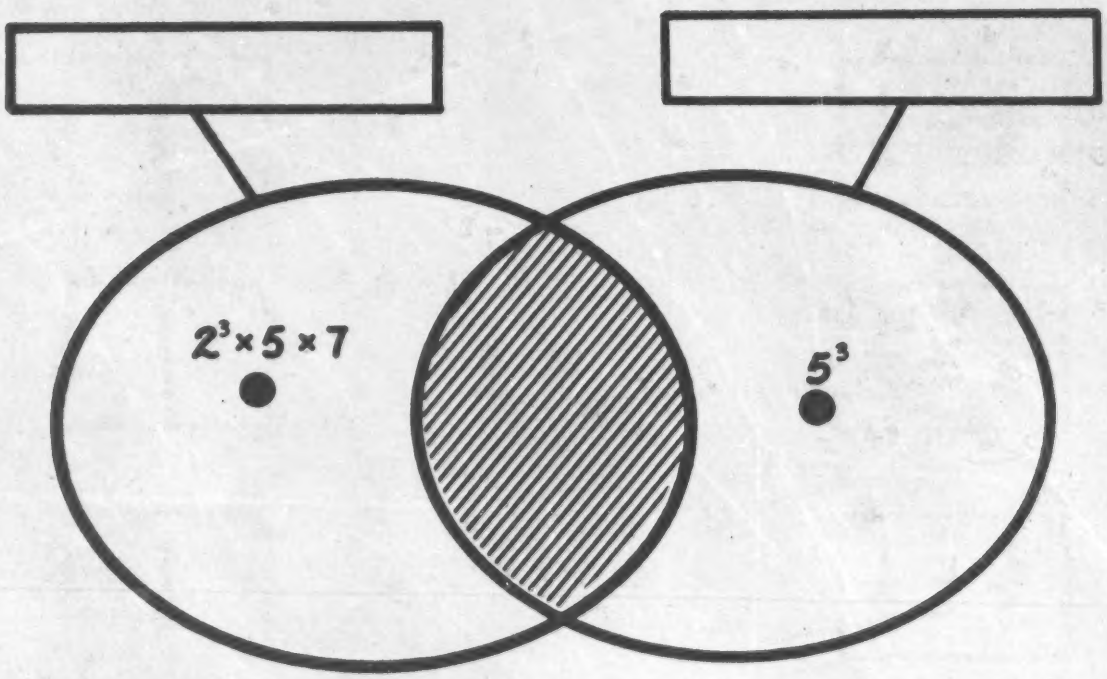
The red tag is one of these:

| |
|---|
| multiples of 5 |
| multiples of 7 |
| odd numbers |
| prime numbers |
| multiples of 10 |
| multiples of 25 |

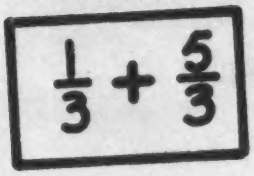
The blue tag is one of these:

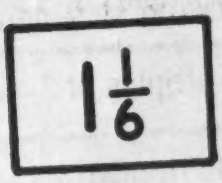
| |
|---|
| multiples of 5 |
| multiples of 7 |
| odd numbers |
| prime numbers |
| multiples of 10 |
| multiples of 25 |

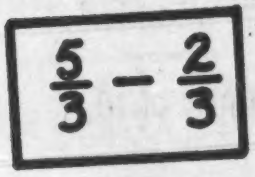
Label the strings.

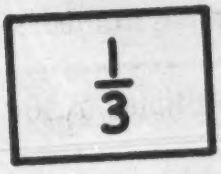


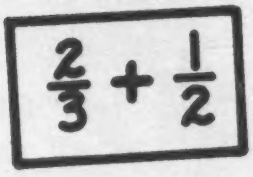
Pair the tags.

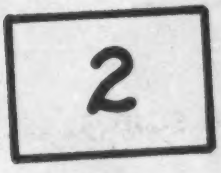


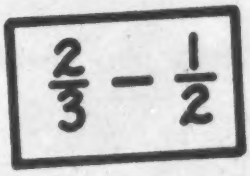



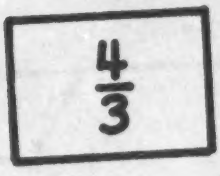



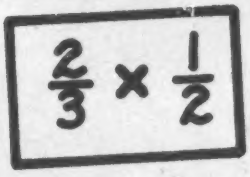



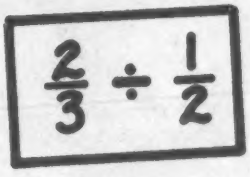



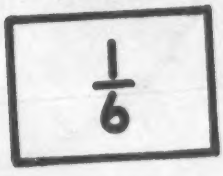





After a burglary, the police questioned three men: Archie, Gus, and Paul. The police knew that exactly one of these men was guilty. The suspects made the following statements:

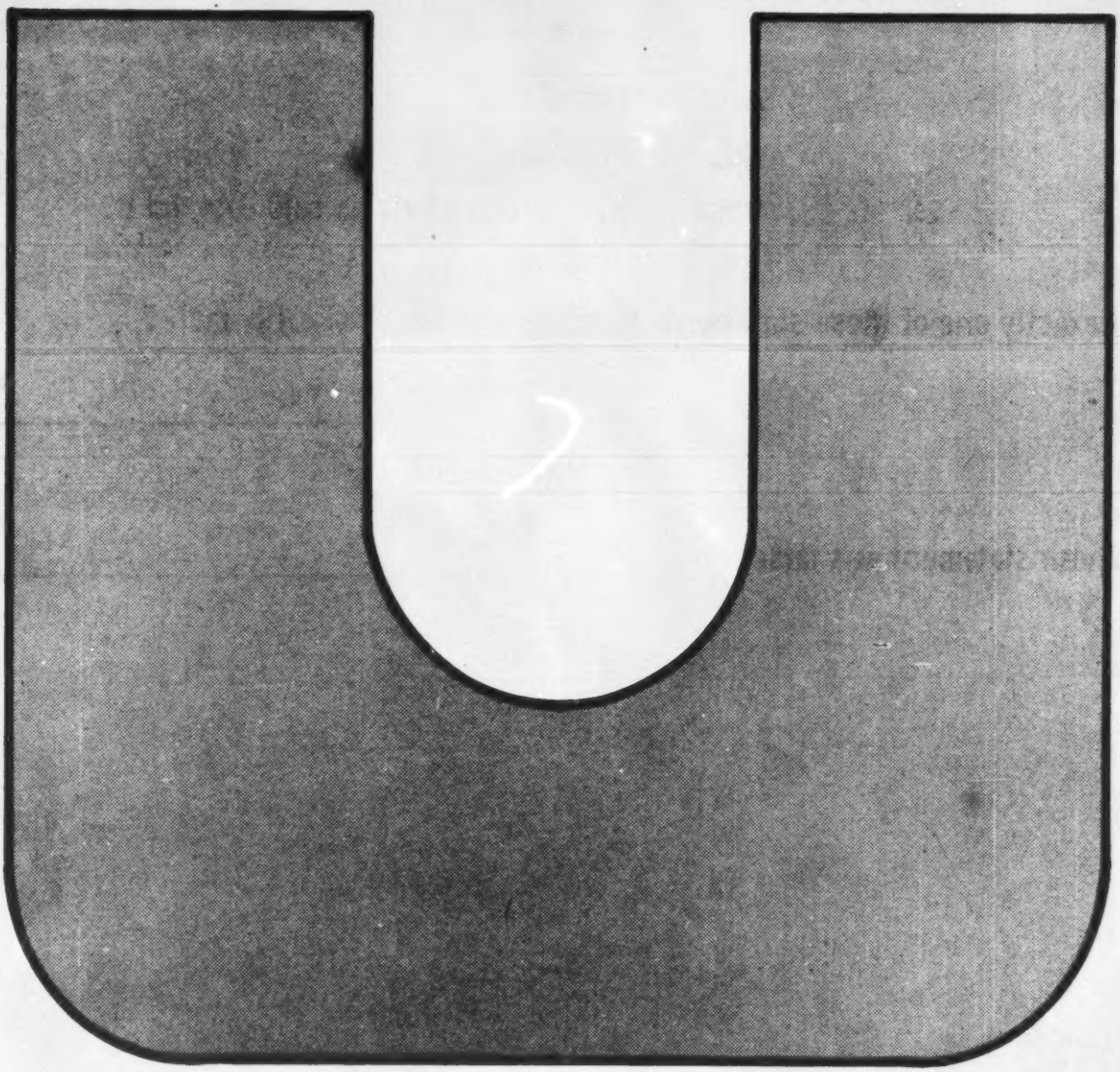
Archie: Gus did it.
Gus: Paul did it.
Paul: Archie lied when he said Gus did it.

If exactly one of these statements is false, who was the guilty man?

_____

Whose statement was false? _____

Use <u>three</u> lines to divide this shape into as many regions as you can.



How many regions? _____

Complete the calculations. Draw all the missing red arrows between the dots.

is smaller than →

$\frac{3}{4} + \frac{2}{5} = __$

●

$\frac{3}{4} - \frac{2}{5} = __$

●

●

$\frac{3}{4} \times \frac{2}{5} = __$

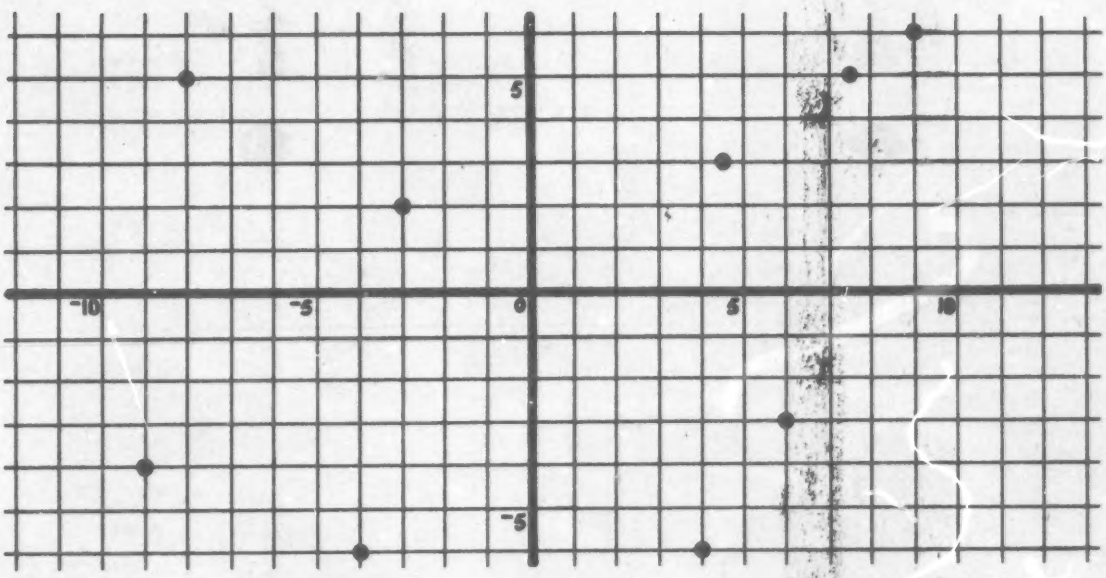
●

$\frac{3}{4} \div \frac{2}{5} = __$

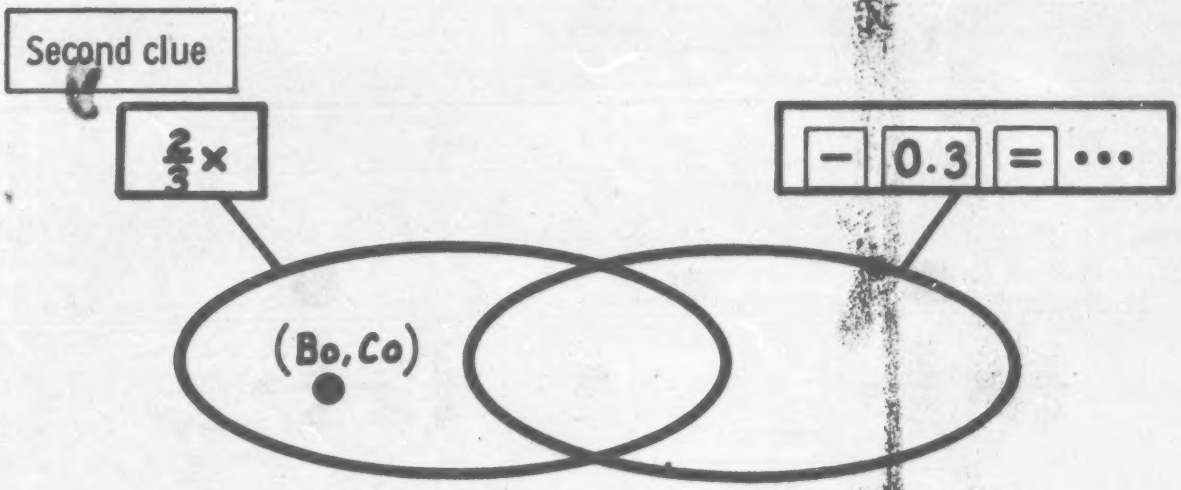
Bo and Co are secret numbers.

**First clue**

(Bo, Co) is one of the dots on this grid. You do not have to label the dots.




**Second clue**



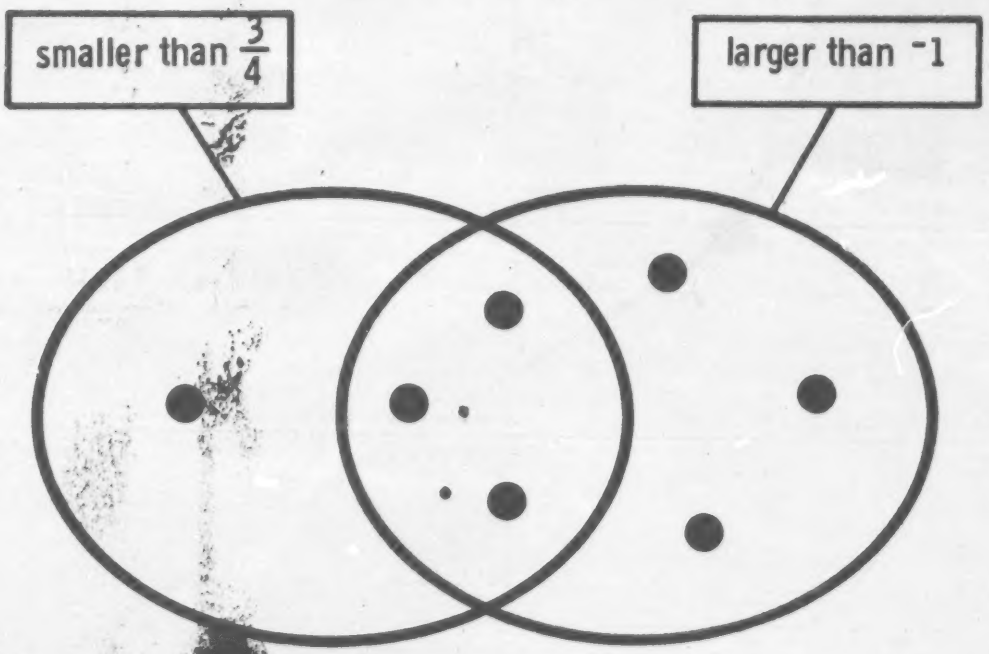

(Bo, Co) is (___, ___).

Label the dots. One of the numbers has two names listed. Write both names for that number beside its dot.

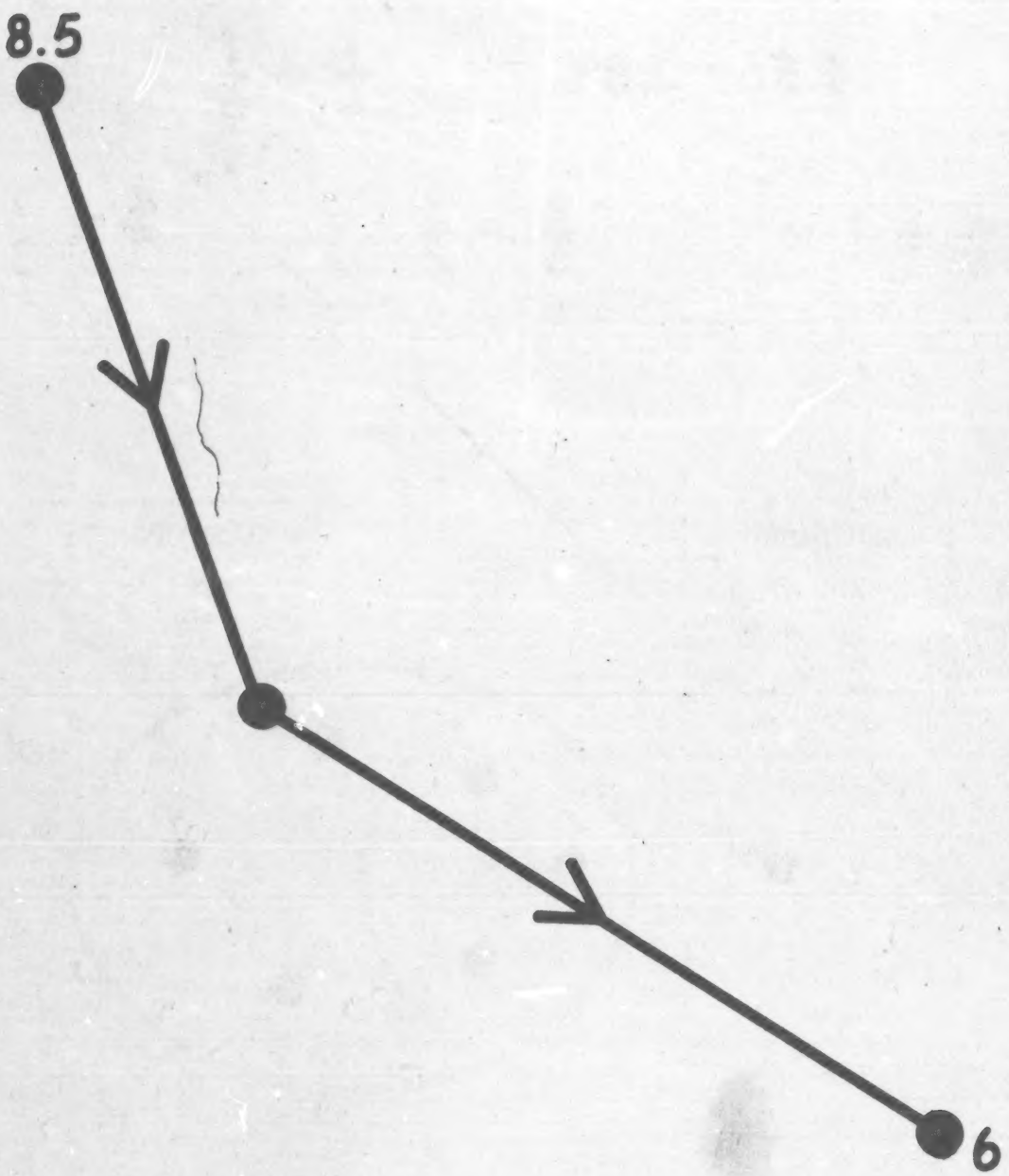
$\frac{2}{3} \div \frac{1}{2}$ $\quad -\frac{3}{2} + \frac{2}{3}$ $\quad 0.5 \times 2.2$

$1.56 - 0.89$ $\quad \frac{1}{6} \div \frac{1}{5}$

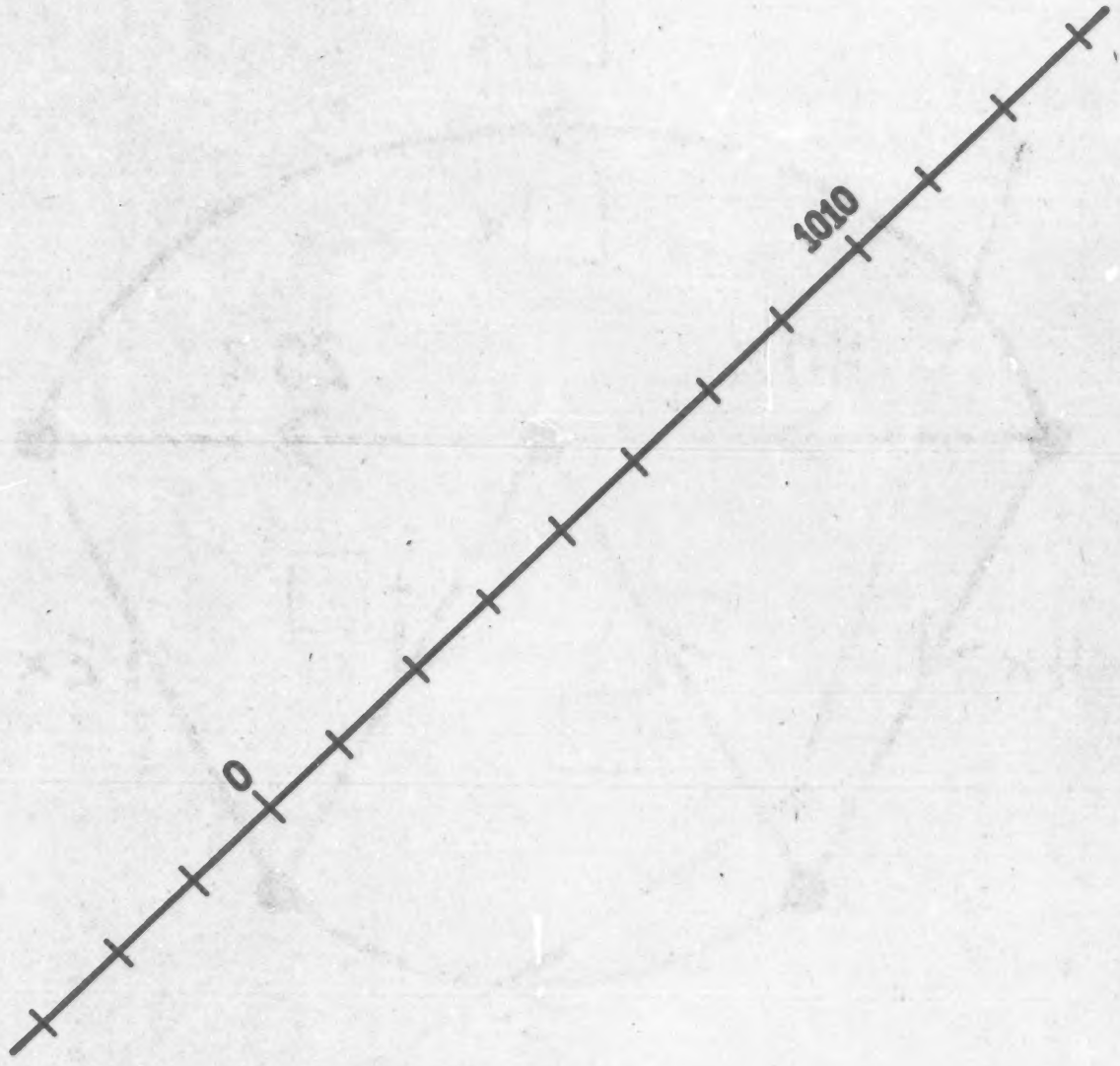
$\frac{1}{6} \div 1$ $\quad \frac{2}{5} - \frac{3}{2}$ $\quad \frac{4}{7} \times \frac{7}{3}$



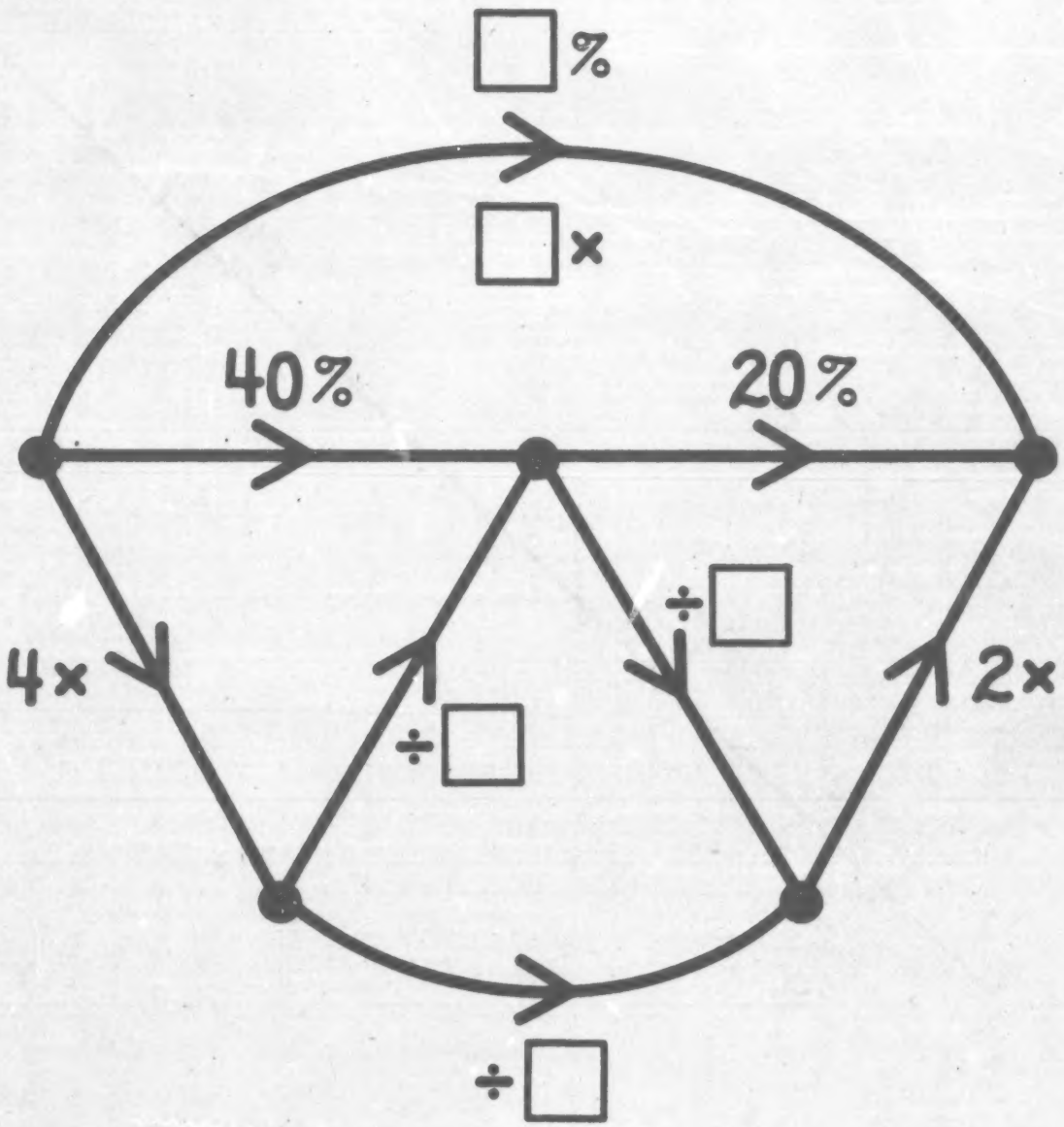
Build a road from 8.5 to 6 with <u>exactly two</u> arrows. Each arrow must be for $+\square$, $-\square$, $\times\square$, $\div\square$, where exactly one of the digits: 1, 2, 3, 4, 5, 6, 7, 8, or 9 is in a box.



Label this number line in the binary code.



Fill in the boxes for the arrows.



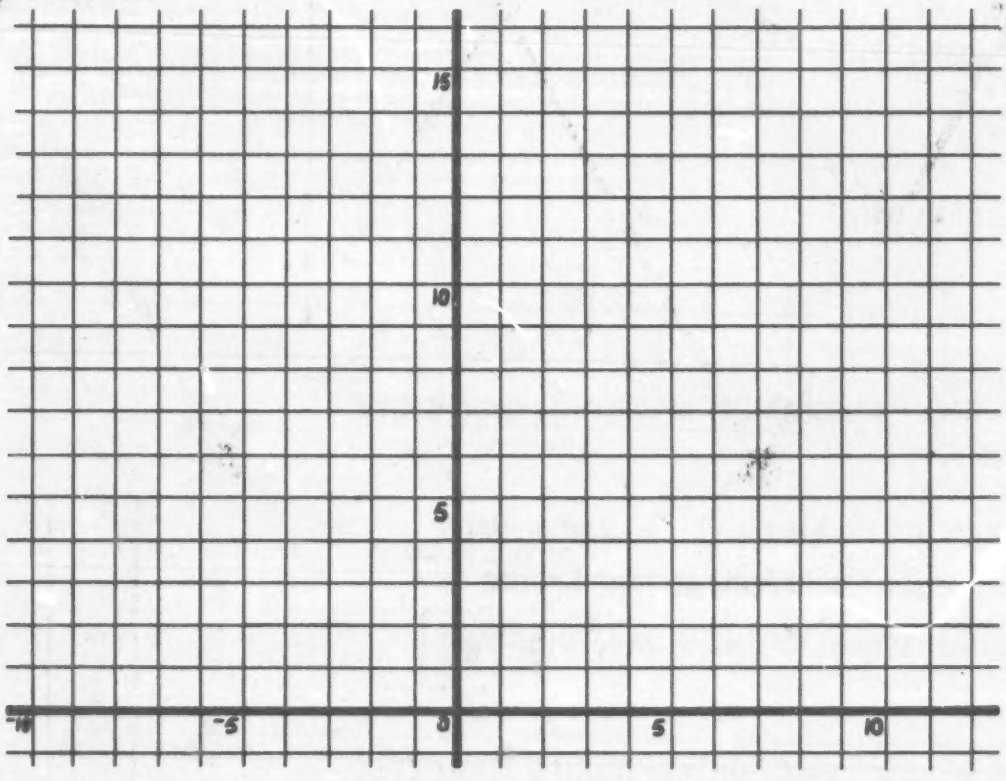
$$a \rightarrow (a-3)^2$$

Fill in the blanks. Each ordered pair belongs to the red relation. One is done for you.

$(5, 4)$ $(7, __)$ $(2, __)$

$(-1, __)$ $(3\frac{2}{3}, __)$ $(\frac{9}{2}, __)$

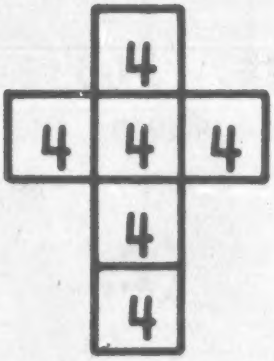
For each ordered pair, draw a dot on the grid. Sketch the Cartesian graph for this relation.

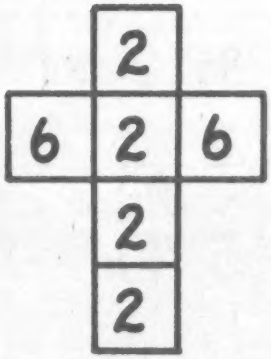



Name two more ordered pairs which belong to the red relation.

(_____, _____) and (_____, _____)

These are the maps of two number cubes.

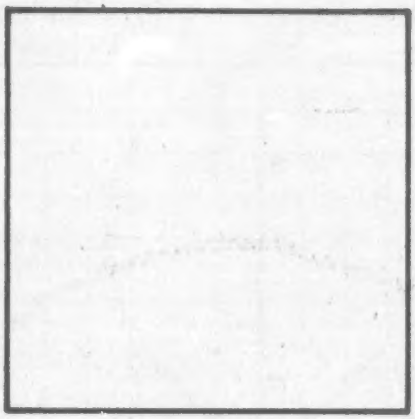



Roger rolls the red cube and Beth rolls the blue cube. Use this square to calculate the probability that Roger wins by rolling the higher number.

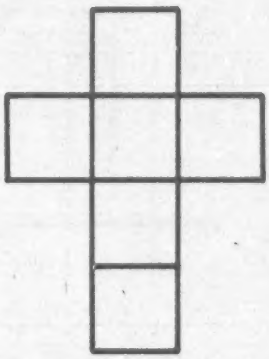
● Roger wins

● Beth wins



What is Roger's probability of winning over Beth? _____

Using only the numbers, 1, 3, and 5, label this black cube for Brenda so that Brenda is favored over Roger, but Beth is favored over Brenda.



What is Brenda's probability of beating Roger? ____

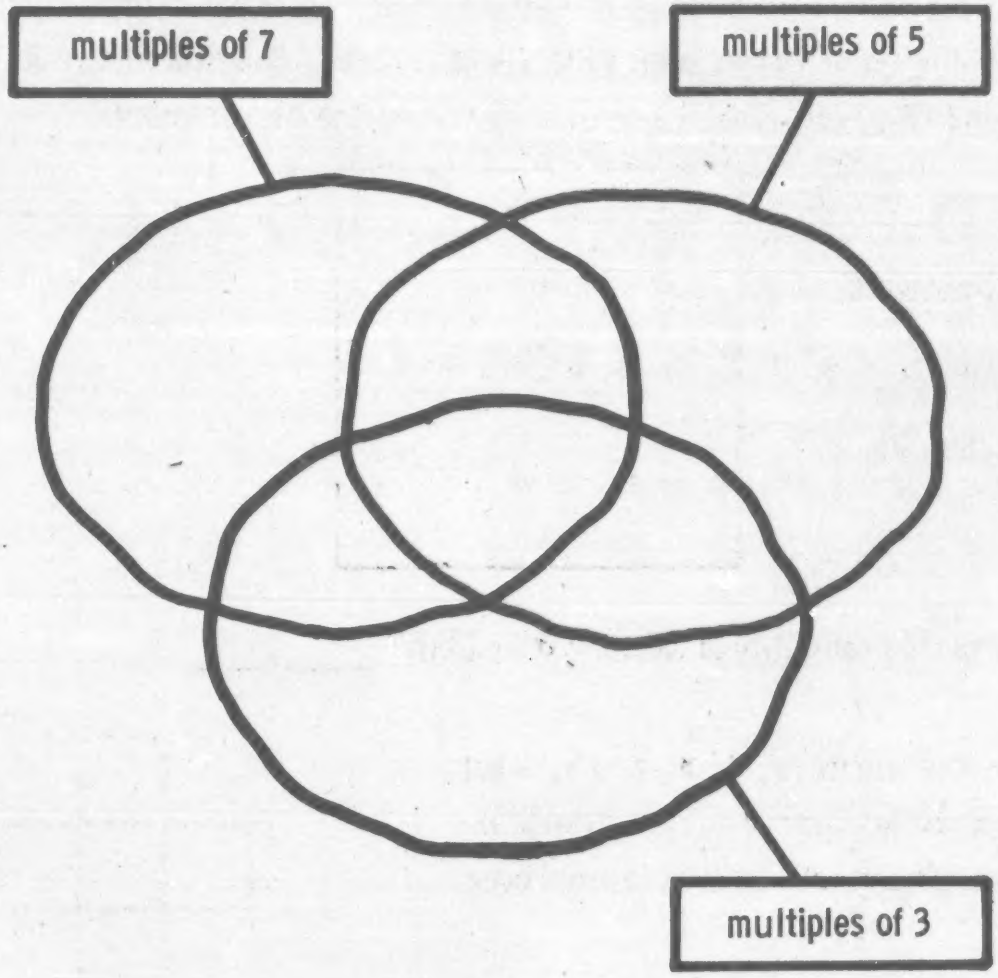
What is Beth's probability of beating Brenda? _____

Draw a fourth string for smaller than 50.

Put these numbers in the string picture.

28 35 39 40 42 44 45 56

57 63 65 75 105 140 142




One region in your picture should be empty. Hatch it.

$\frac{1}{4}$ 123 $-25$

1.8 $-16$ 1.28 $\frac{1}{5}$

Names for the above numbers can be written using just these symbols. Each symbol may be used as often as you wish.

3 5 − ÷ ( ) 2

Example: $2^3 \div 2^5 = 8 \div 32 = \frac{1}{4}$

Write names for the other numbers above.

_____ _____

_____ _____

_____ _____

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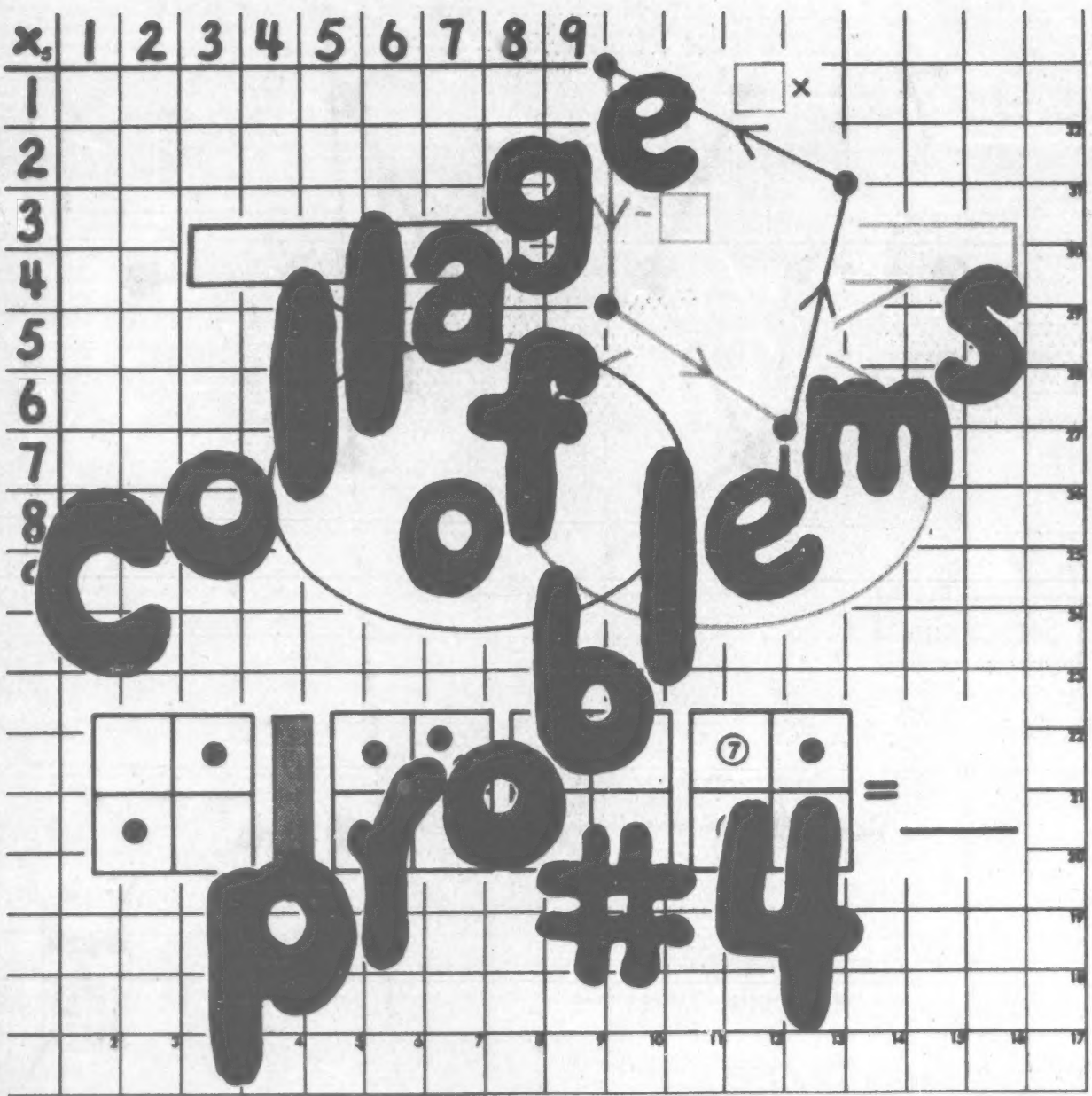
Name _____

6-39901



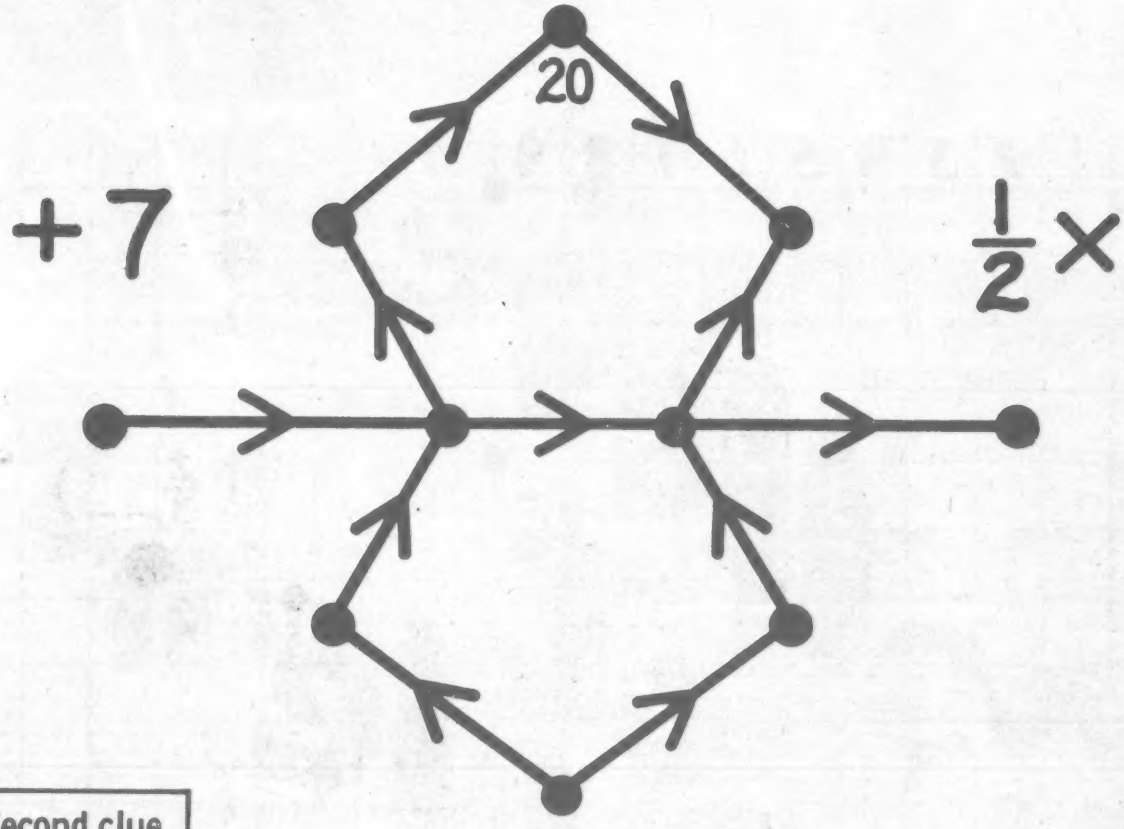



MAY 1 6 1980

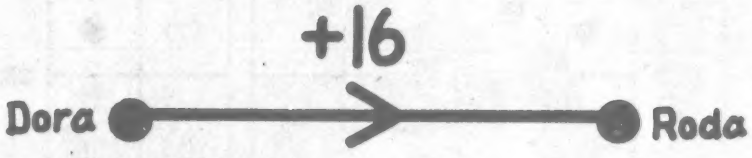
Dora and Roda are secret numbers.

**First clue**

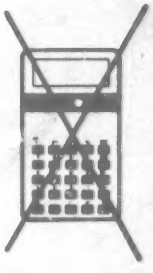
Dora and Roda are in this arrow picture.



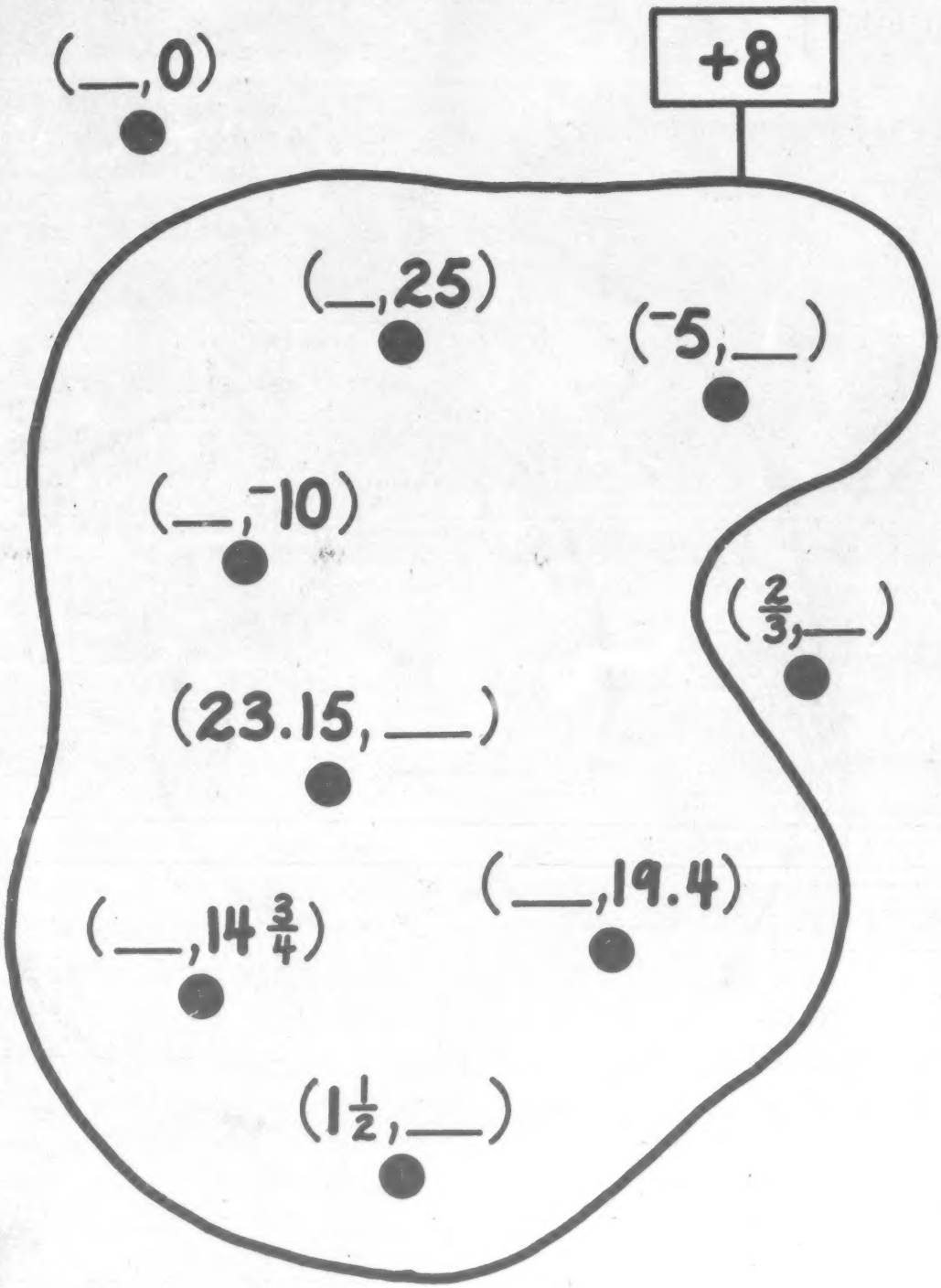

**Second clue**




(Dora, Roda) is (____, ____).

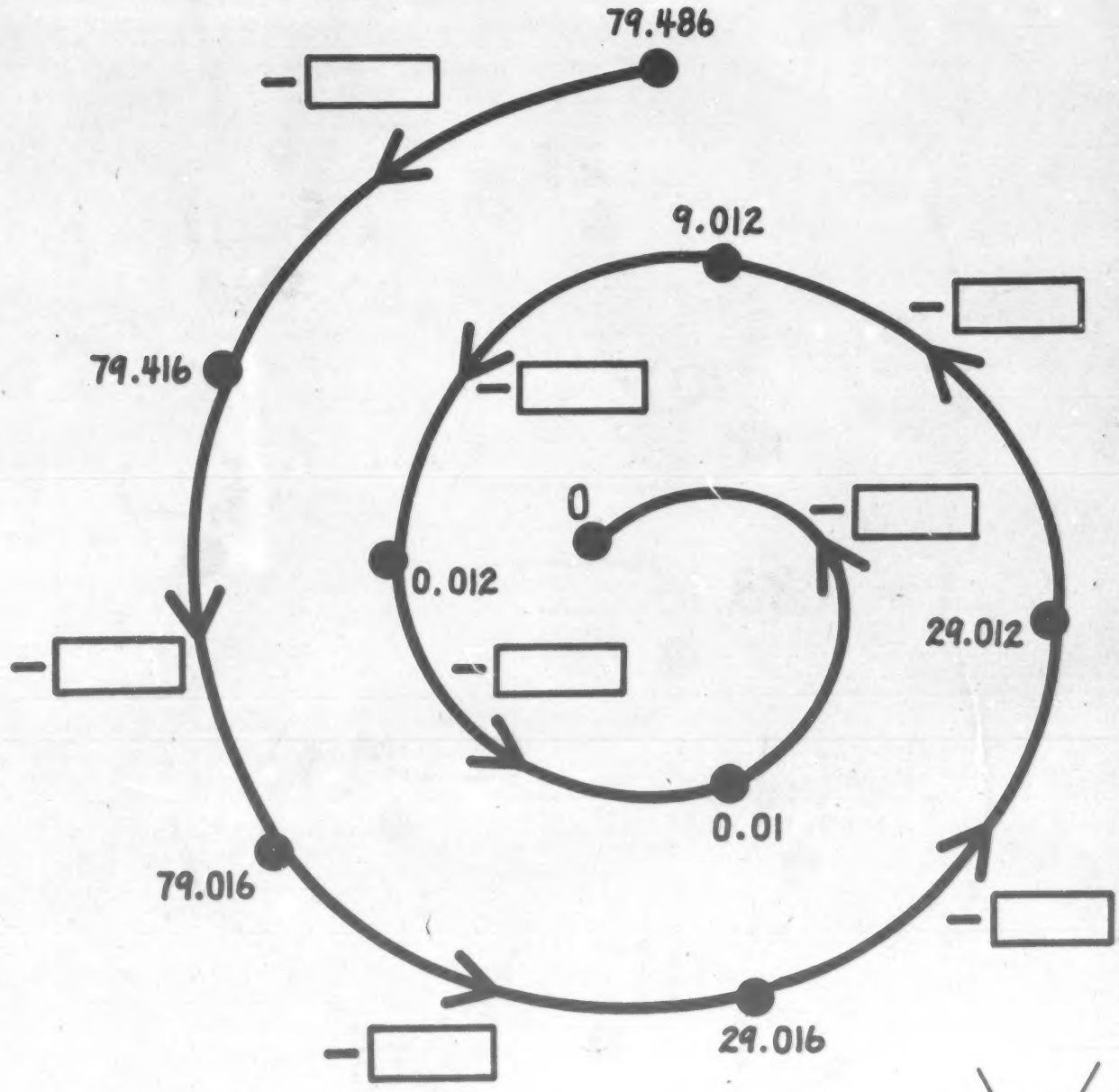


Fill in the blanks.



# WIPE-OUT

Fill in the boxes for the arrows.



Fill in each box with " < ", " > ", or " = ". Try to solve these problems without doing any calculation.

$55 \div 9$ ☐ $55 \div 7$

$73 \div 6$ ☐ $87 \div 6$

$23 \div 3$ ☐ $280 \div 30$

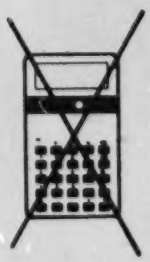
80% of 40 ☐ 20

23% of 18 ☐ 18

100% of 37 ☐ 37

$\frac{3}{2} \times 175$ ☐ 175

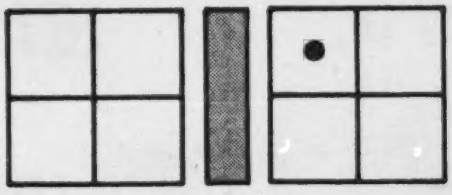
$\frac{2}{3} \times 175$ ☐ 175



Liba is a secret number.

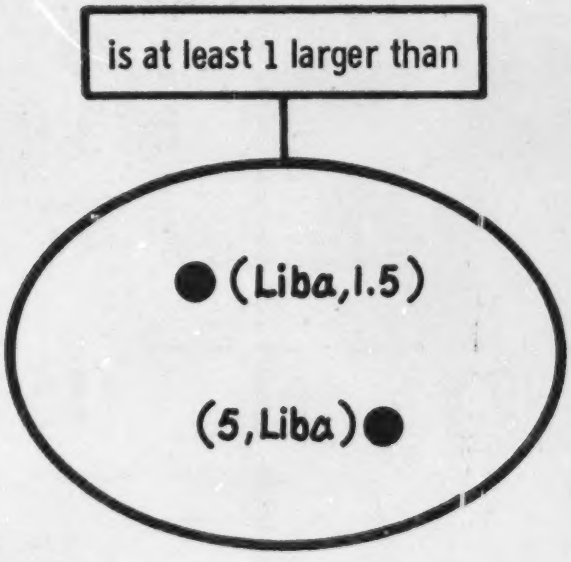
First clue

Liba can be put on this Minicomputer by adding exactly one regular positive checker.



Liba could be _____, _____, _____, _____, _____, _____, _____, or _____.

Second clue




Liba is _____.

Complete the calculations. Show your work.

Add

$$\begin{array}{r} \square.7 \\ 30.\square 8 \\ 7.09 \\ +26.5\square \\ \hline \square 9.73 \end{array}$$

Add

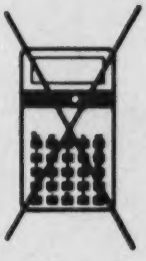
$163.7 + 38 + 84.53$

Subtract

$$\begin{array}{r} \square 9.60 \\ -2\square.\square 3 \\ \hline 63.7\square \end{array}$$

Subtract

$803.42 - 539.6$



Complete.

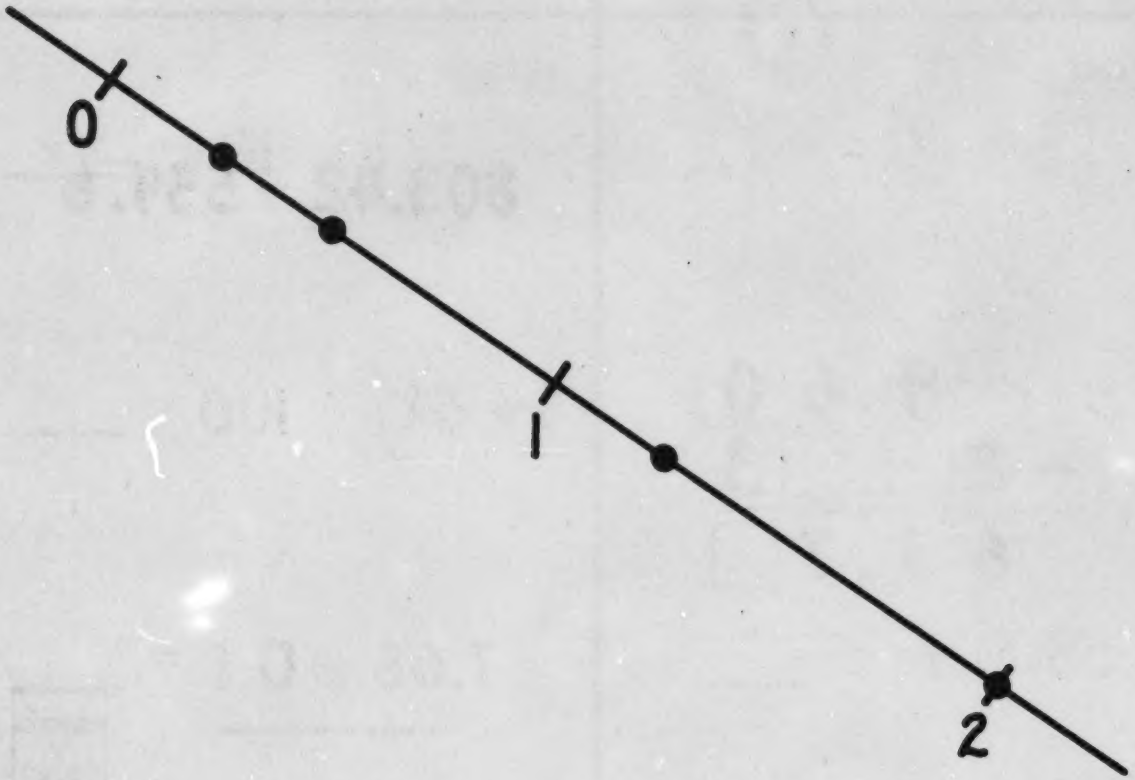
$\frac{5}{4} + \frac{3}{4} =$ ____

$\frac{3}{4} + \frac{1}{2} =$ ____

$\frac{5}{4} - \frac{3}{4} =$ ____

$\frac{3}{4} - \frac{1}{2} =$ ____

Use the numbers above to label the dots on this number line.






196

Fill in the blanks. Recall that ® is the "rounding" operation.

Examples: 11 ® 3 = 12 because the nearest multiple of 3 to 11 is 12.
4.3 ® 0.5 = 4.5 because using [0.5] [+] [=] ···
the closest we get to 4.3 is 4.5.

17 ® 4 = ____ 60 ® 7 = ____

38 ® 5 = ____ 172 ® 20 = ____

283 ® 10 = ____ 44,527 ® 10 = ____

283 ® 100 = ____ 44,527 ® 100 = ____

13.58 ® 1 = ____ 7.66 ® 0.1 = ____

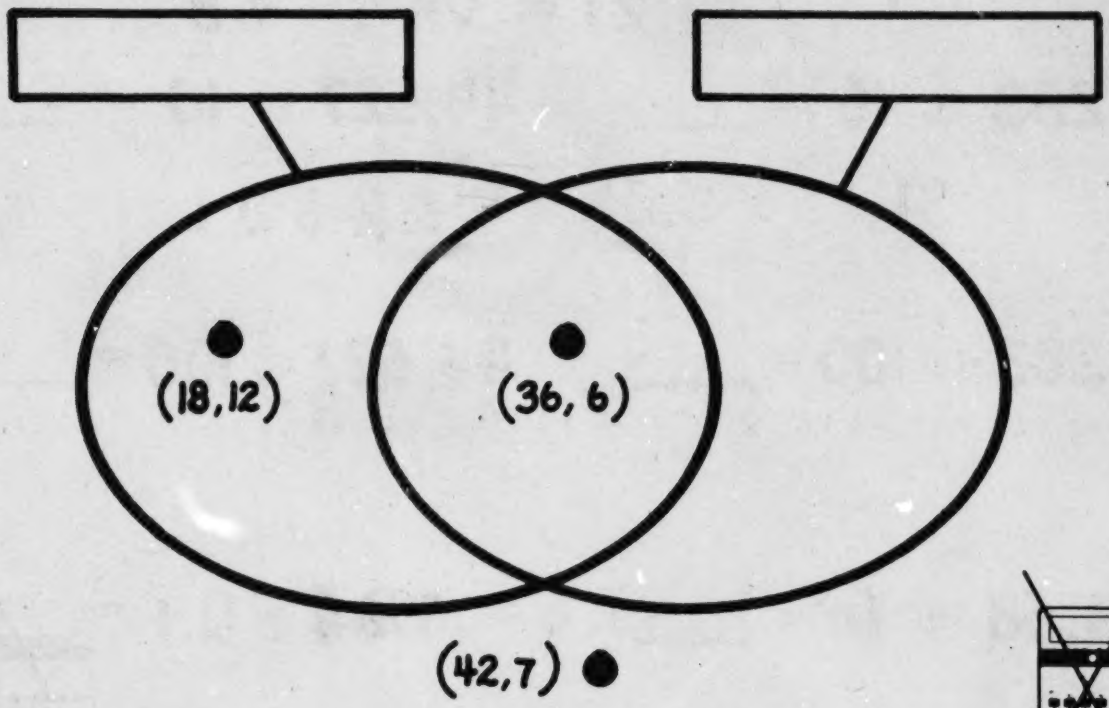
The red tag is one of these:

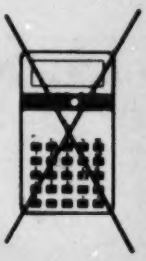
| is at least 20 larger than |
| --- |
| is a multiple of |
| is the square of |
| $\frac{2}{3}\times$ |
| − 2 = ••• |
| − 4 = ••• |

The blue tag is one of these:

| is at least 20 larger than |
| --- |
| is a multiple of |
| is the square of |
| $\frac{2}{3}\times$ |
| − 2 = ••• |
| − 4 = ••• |

Label the strings.



ach calculation is correct, except that a decimal point is missing in the answer. Place a decimal point in each answer to make a true number story.

$376 + 14.29 + 265.8 = 65609$

$408.27 + 255.68 + 3,862.75 = 45267$

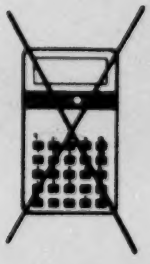
$3,461.3 - 512.76 = 294854$

$7.4 \times 53.27 = 394198$

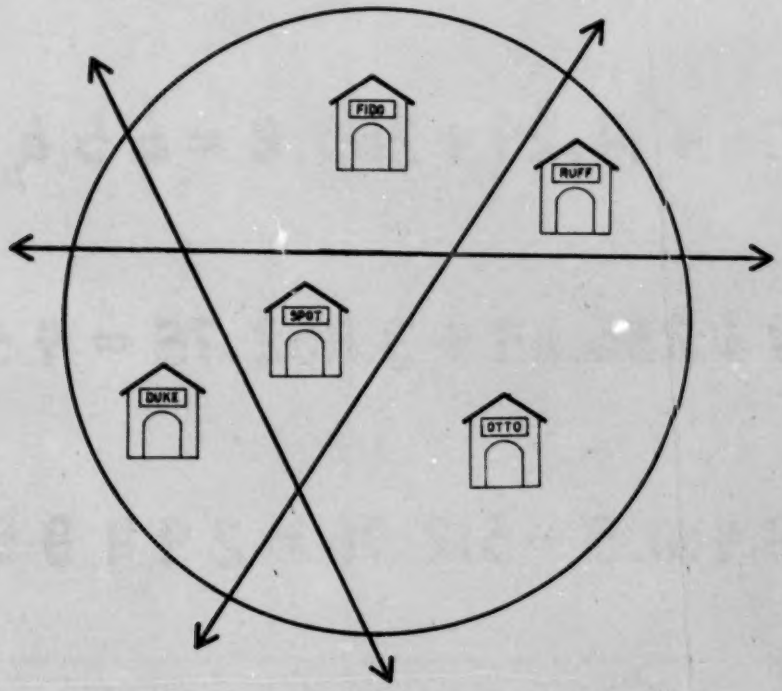
$31.35 \times 8.06 = 252681$

$648.69 \div 2.1 = 3089$

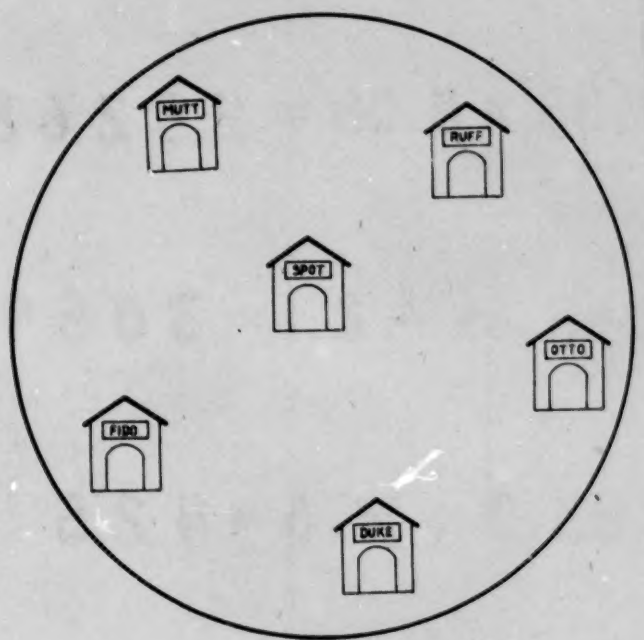
$83.3 \div 19.6 = 425$



Using three straight fences (lines), this circle is divided so that each dog house is a different region.




Use three straight fences (lines) to divide this circle so that each dog house is in a different region.



Complete the calculations. Show your work.

**Multiply**

$$\begin{array}{r} 7.36 \\ \times\ 1.3 \\ \hline \end{array}$$

**Multiply**

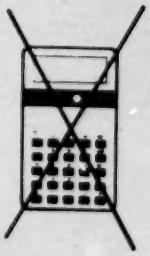
$97.2 \times 6.7$

**Divide**

$7\overline{)596.4}$

**Divide**

$2356.2 \div 63$





201

Alice, Brenda, and Carl are all different ages. They make the following statements.

Alice: I am older than Carl.

Brenda: Carl is not the oldest.

Carl: I am older than Brenda.

Problem 1: If all three statements are true,

who is the oldest? _____

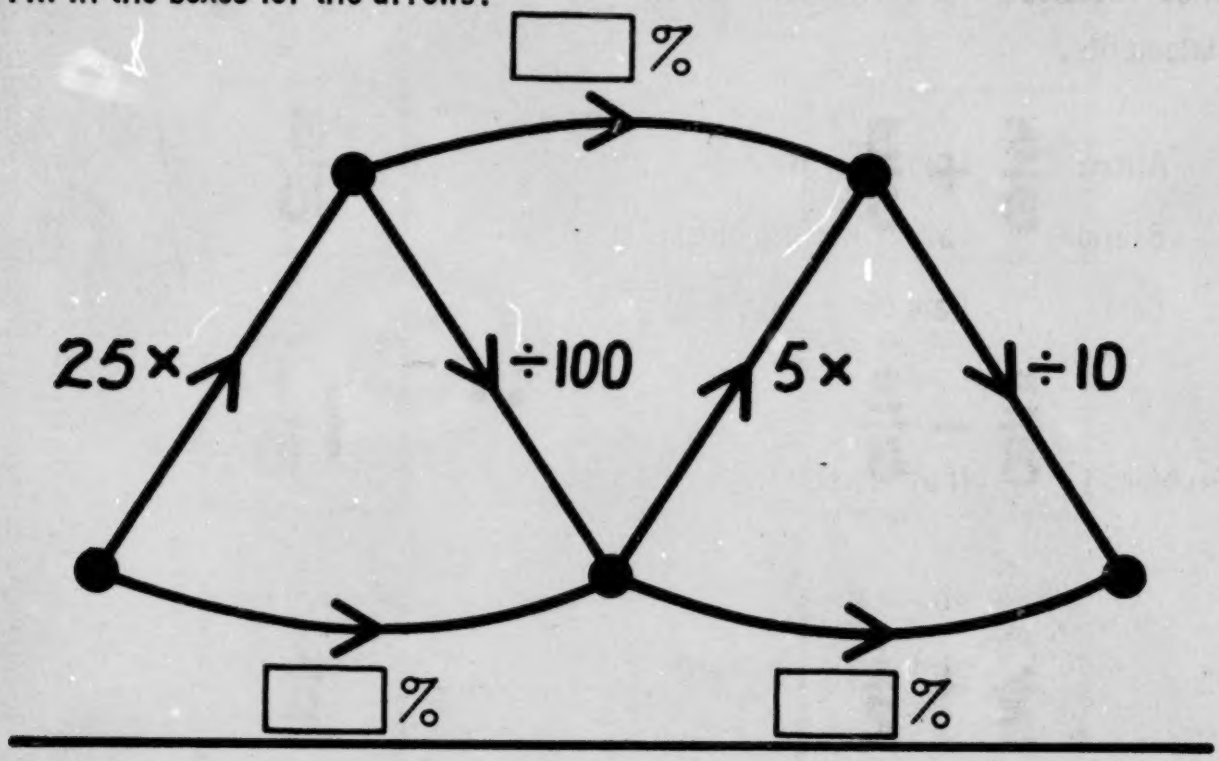
who is the youngest? _____

Problem 2: If exactly one of the statements is false,

who is the youngest? _____

whose statement is false? _____

Fill in the boxes for the arrows.




Complete.

25% of 20 = □

5% of 40 = □

$\frac{1}{4}$ × 20 = □

5% of □ = 40

25% of □ = 20

50% of 40 = □

$\frac{1}{4}$ × □ = 20

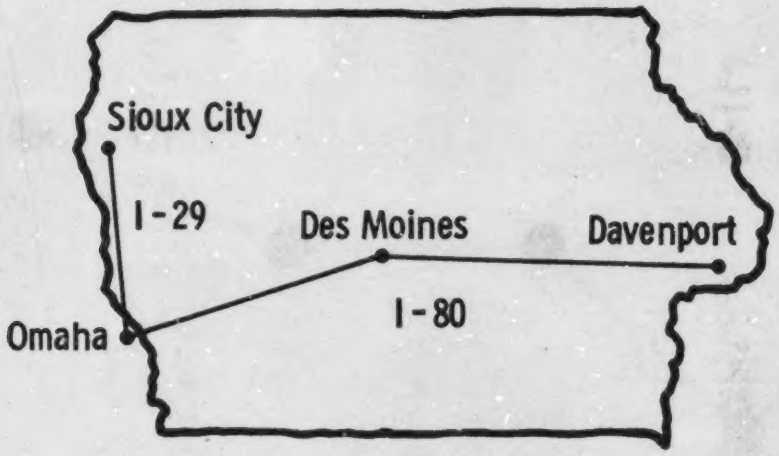
50% of □ = 40

Pair the tags.

| | |
|---|---|
| $\frac{5}{8} + \frac{3}{8}$ | $\frac{3}{10}$ |
| $\frac{5}{8} - \frac{3}{8}$ | $1\frac{1}{10}$ |
| $\frac{3}{5} + \frac{1}{2}$ | $\frac{1}{4}$ |
| $\frac{3}{5} - \frac{1}{2}$ | $\frac{6}{5}$ |
| $\frac{3}{5} \times \frac{1}{2}$ | $1$ |
| $\frac{3}{5} \div \frac{1}{2}$ | $\frac{1}{10}$ |

## IOWA

SCALE: 1 cm = 50 km




Complete.

| | Length of Line Segment on Map | Real Distance by Road |
|---|---|---|
| Davenport to Des Moines | cm | km |
| Des Moines to Omaha | cm | km |
| Omaha to Sioux City | cm | km |

Ms. Peltin drives from Omaha to Davenport on I-80. If she averages 90 km in one hour, about how long is her drive? _____ hr.

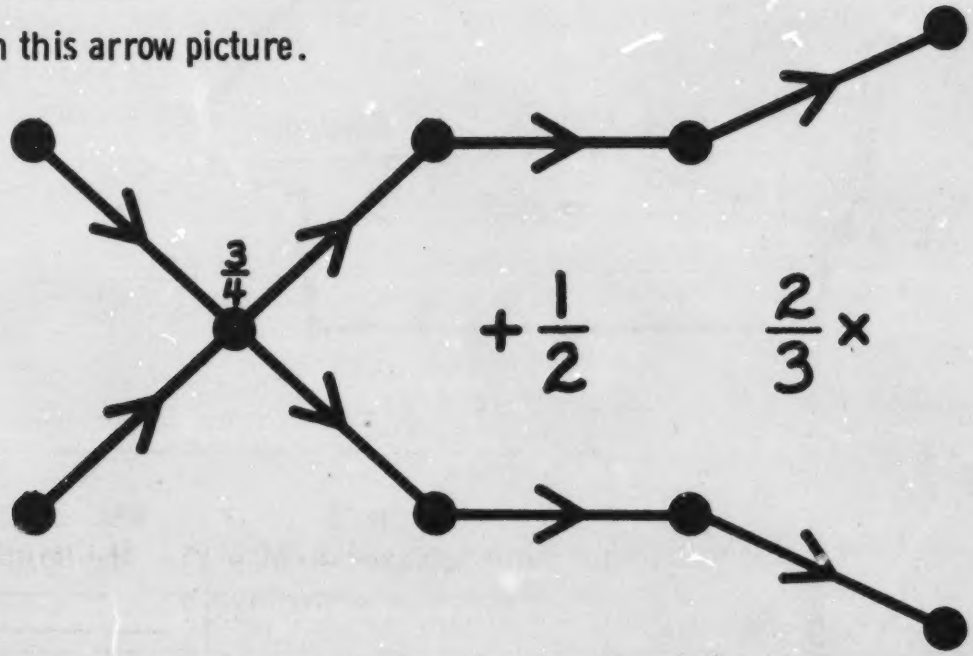
Ms. Peltin's car uses one liter of gasoline every 10 km. The gasoline costs $0.30 for one liter. How much gasoline does she use on her trip from Omaha to Davenport? _____ liters How much does that much gasoline cost? _____

By air, Cedar Falls, Iowa is 325 km from Sioux City and 185 km from Davenport. Draw dots at the two places where Cedar Falls could be. You may use a compass.

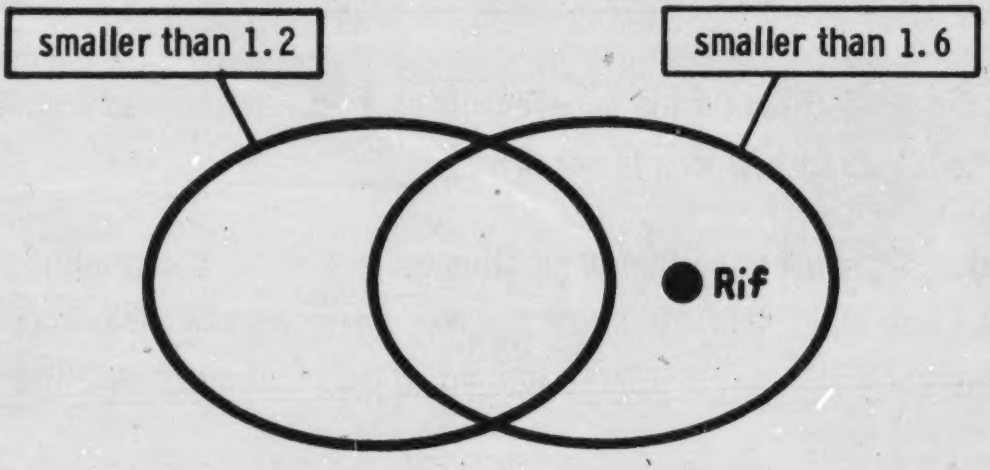
Rif is a secret number.

**First clue**

Rif is in this arrow picture.




**Second clue**




Who is Rif? _____

## TWO AT A TIME

. Pamela is 14 years older than her brother Andrew. She also is 3 times as old as Andrew. How old is Pamela? _____ Andrew? _____

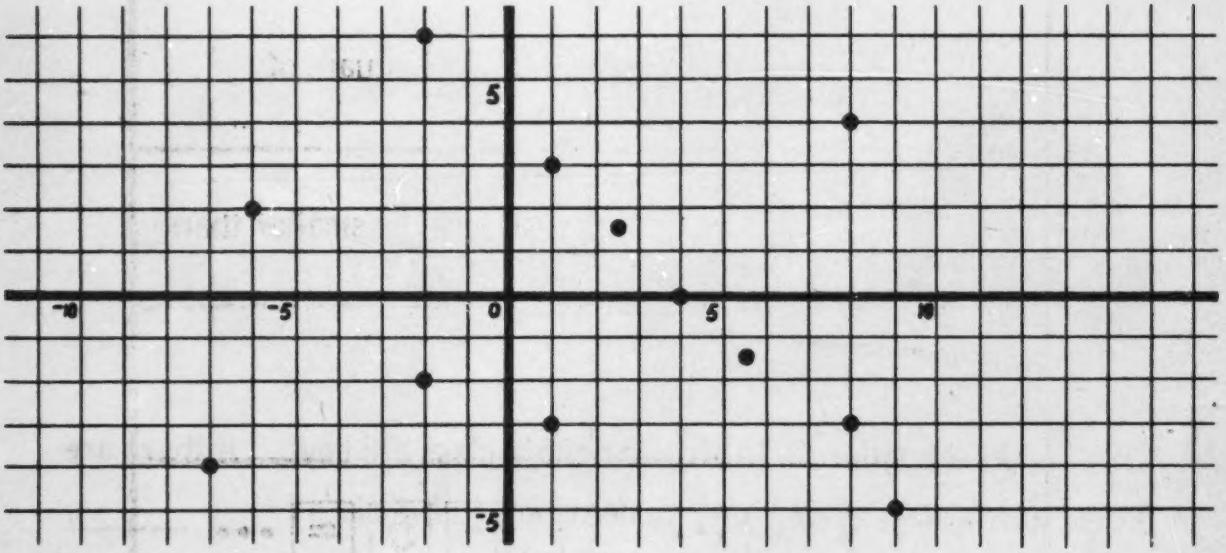
. Only $\frac{1}{3}$ of the students in Mr. Cunetto's class are boys. If there are 9 boys in his class, how many students are in his class? _____

How many girls are in his class? _____

Fee and Gee are secret numbers.

**First clue**

(Fee, Gee) is one of the dots on this grid. You do not have to label the dots.

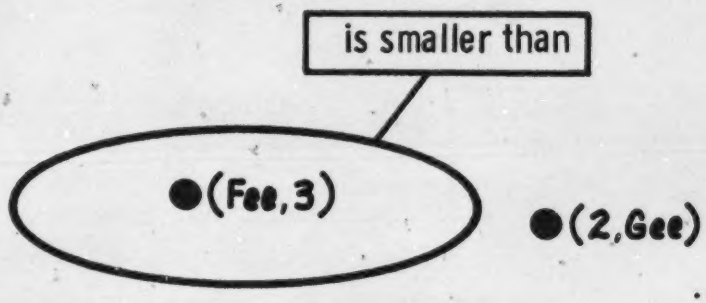



**Second clue**

$$Fee + Gee = 4$$

On the grid, circle the six dots that (Fee, Gee) could be.

**Third clue**




(Fee, Gee) is (____, ____).

# THE RELATIONS GAME

Find an ordered pair, (Vim, Vam), which belongs to <u>at least three</u> of these relations. Many solutions are possible.

| | |
|---|---|
| $2x$ | is the square of |
| $\div 2$ | is at least 20 smaller than |
| $\frac{3}{2}x$ | is a multiple of |
| $\boxed{+}\boxed{3}\boxed{=}\cdots$ | $\boxed{-}\boxed{5}\boxed{=}\cdots$ |

(Vim, Vam) could be (____, ____).

Circle all the relations that your choice of (Vim, Vam) belongs to.

**Find all the places in this table where the entry is 2.**

| x, | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |

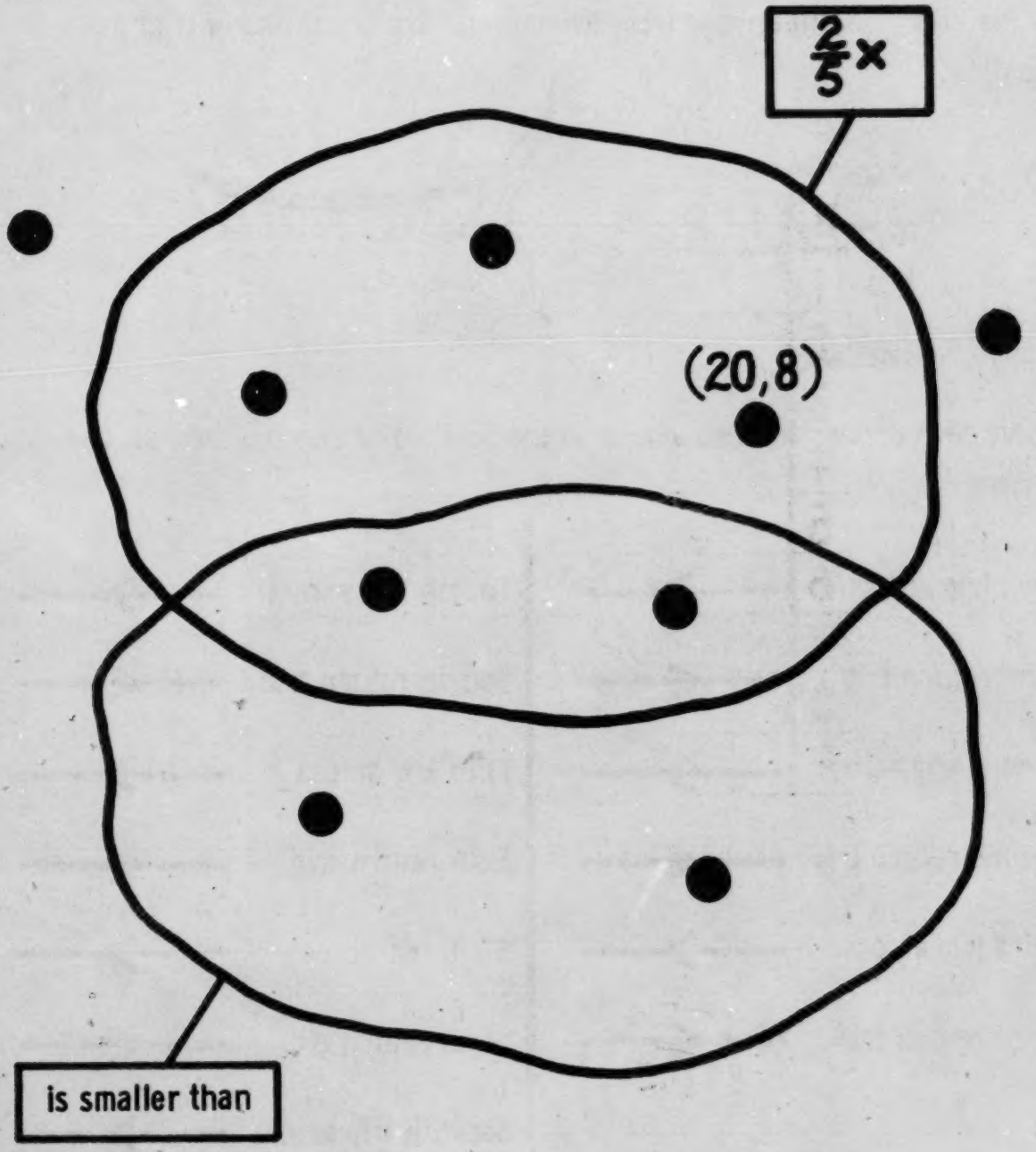


210

The dots are for ordered pairs of numbers.

Label the dots. One is done for you. Many answers are possible.

Hint: Some answers require negative numbers.



Mr. and Mrs. Harris and their two children, Audrey and Glen, must cross a river. The only boat available is a small canoe which can hold at most one adult or the two children. All the Harris' know how to paddle the canoe. Describe how the family can use the canoe to cross the river. The alligators in the river prevent anyone from swimming. Try to use as few trips as possible.

Above each arrow, indicate who is in the boat. You may not need all the arrows.

First trip across →

First return trip ←

Second trip across →

Second return trip ←

Third trip across →

Third return trip ←

Fourth trip across →

Fourth return trip ←

Fifth trip across →

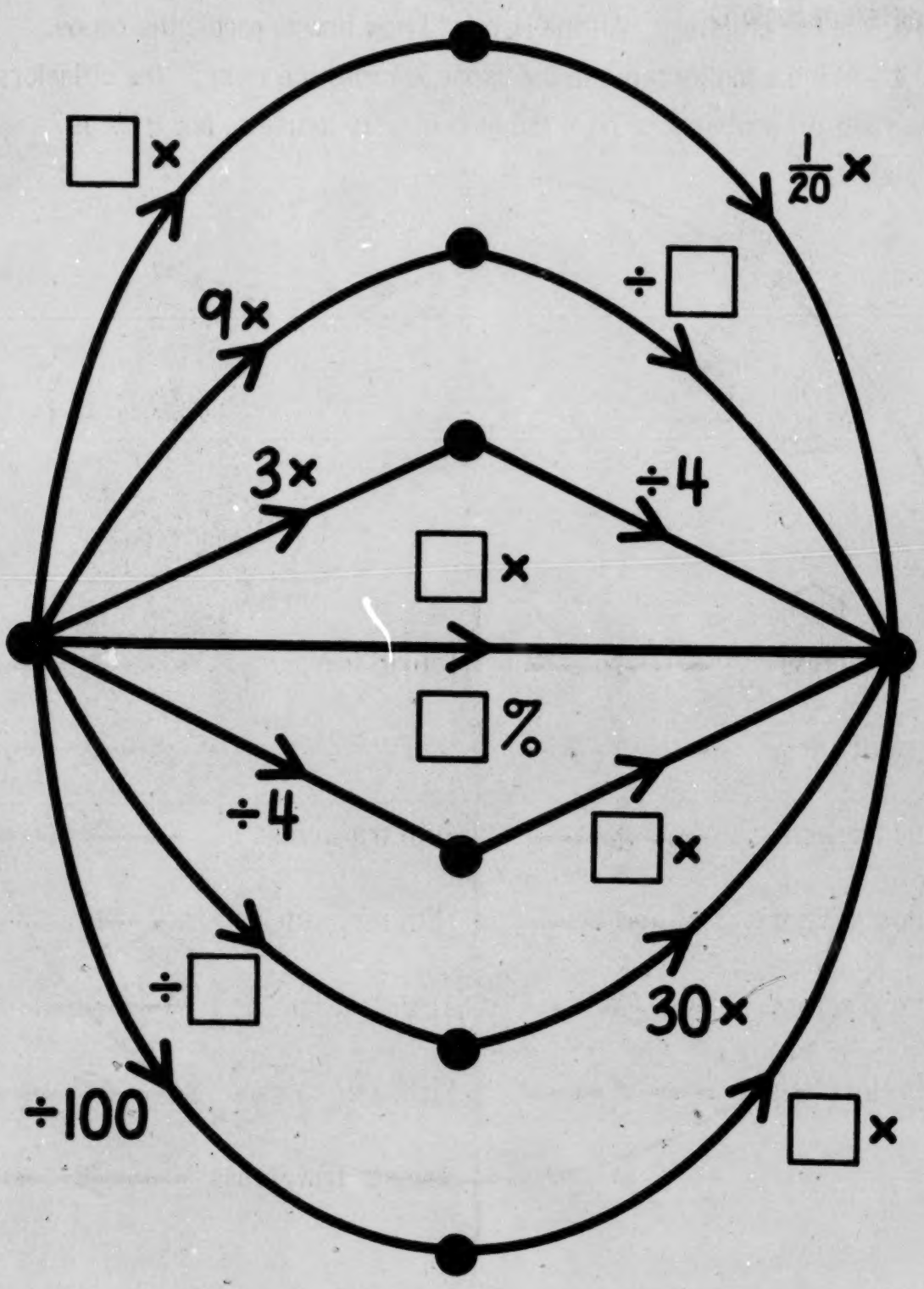
Fifth return trip ←

Sixth trip across →

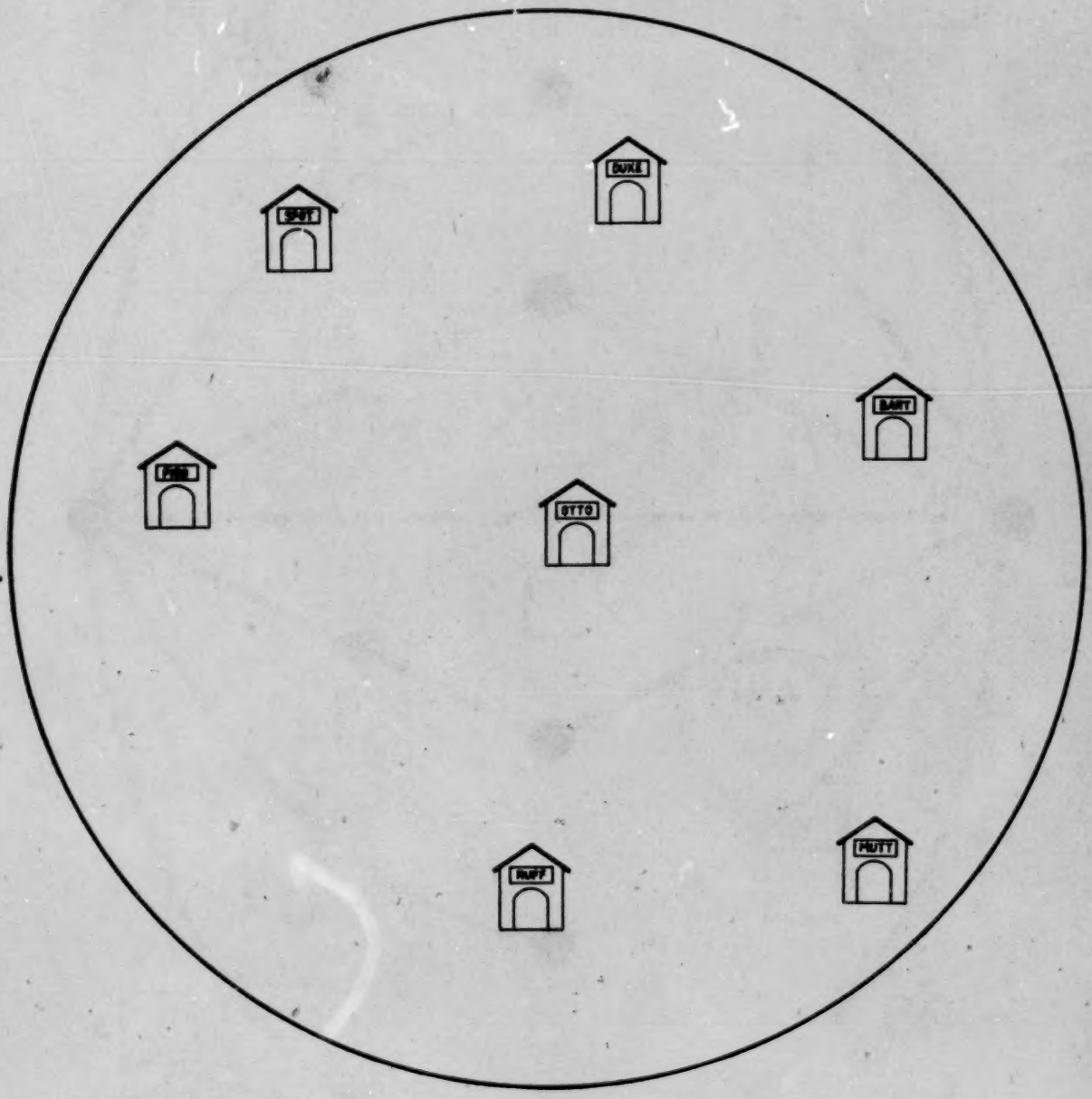
Sixth return trip ←

Seventh trip across →

Fill in the boxes for the arrows.



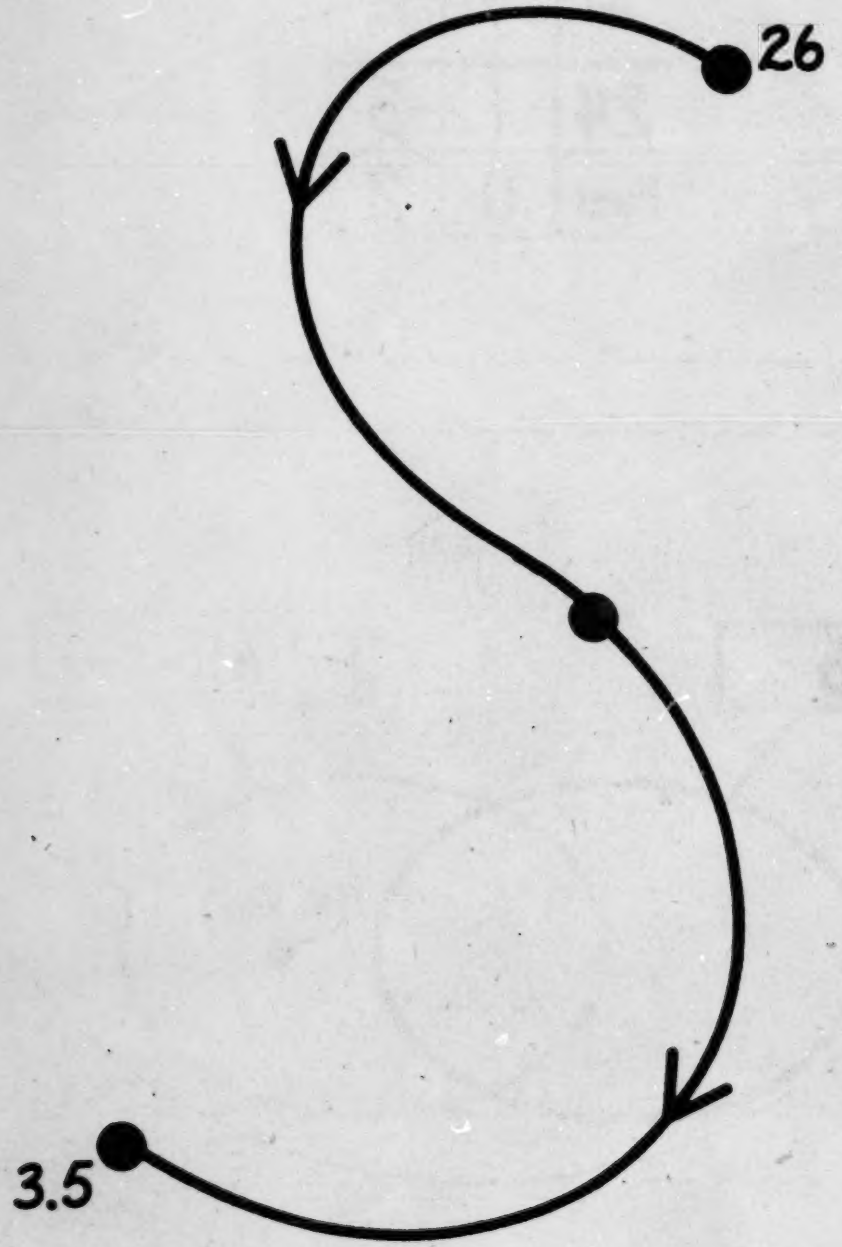
Use three straight fences (lines) to divide this circle so that each doghouse is in a different region.






214

Build a road from 26 to 3.5 with exactly two arrows. Each arrow may be for $+\square$, $-\square$, $\times\square$, or $\div\square$, where exactly one of the digits: 0, 1, 2, 3, 4, 5, 6, 7, 8, or 9 is in a box.



**First clue**

Fo and Fum are secret numbers between $-20$ and 20.

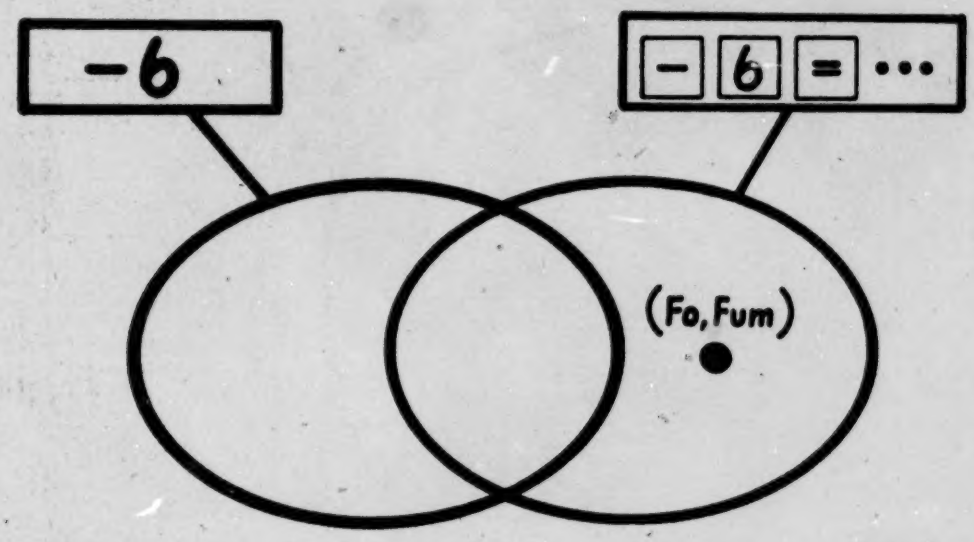
**Second clue**

| $+_5$ | 7 | Fo |
|---|---|---|
| 24 | 1 | 3 |
| Fum | 0 | 2 |

Fo could be ____, ____, ____, ____, ____, ____, ____, or ____.

Fum could be ____, ____, ____, ____, ____, ____, ____, or ____.

**Third clue**




(Fo, Fum) is (____, ____).



216

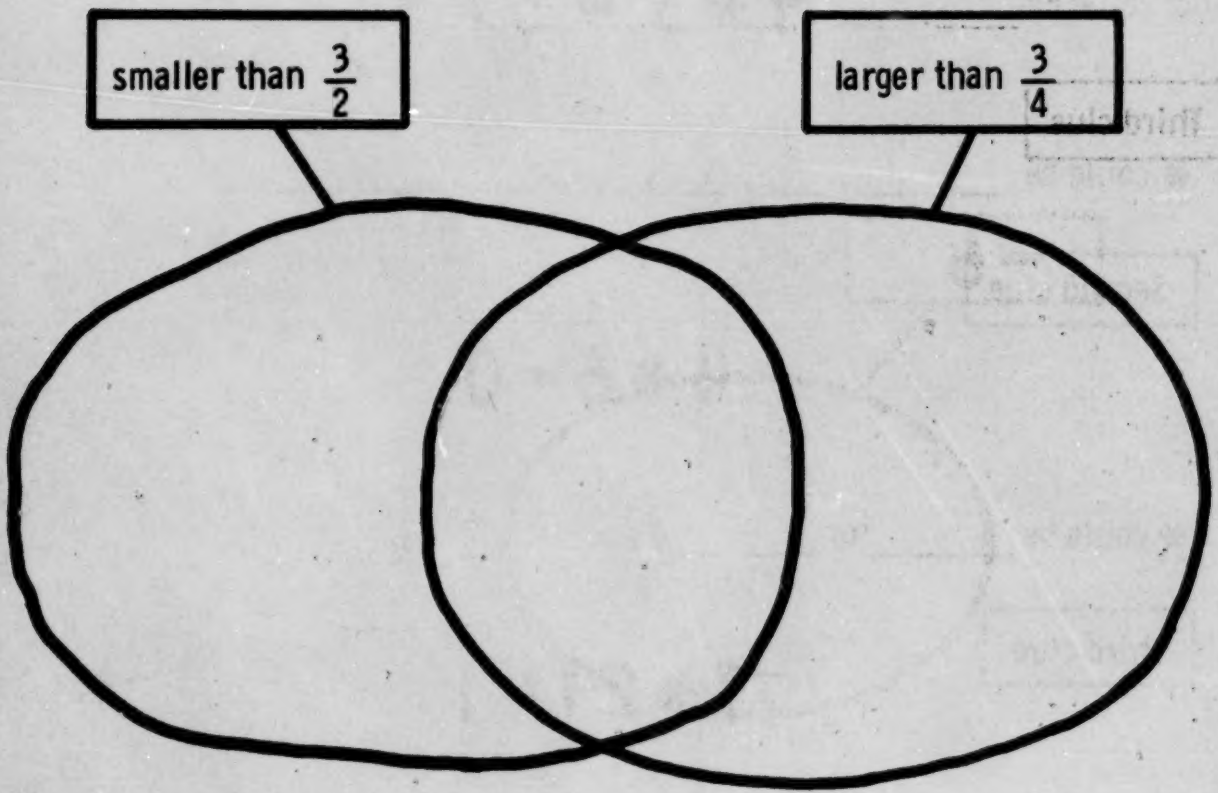
Put these numbers in the string picture.

$\frac{1}{2} + \frac{3}{4}$ $\quad$ $\frac{3}{5} \times \frac{5}{4}$ $\quad$ $2 \times \frac{5}{6}$

25% of 10 $\quad$ 20% of 7

$\frac{7}{8} - \frac{1}{4}$ $\quad$ $\frac{1}{8} \div \frac{1}{7}$ $\quad$ $\frac{2}{5} \div \frac{4}{5}$

$1 + \frac{2}{3}$ $\quad$ $2 - \frac{2}{3}$



* is one of these operations.

| | | | |
|---|---|---|---|
| $+$ | $+_5$ | $\sqcap$ | $\sqcup$ |
| $-$ | $-_5$ | $T_<$ | $T_>$ |
| $\times$ | $\times_5$ | $T_D$ | $T_M$ |
| $\uparrow$ | $\downarrow$ | $T_{-2}$ | $T_{-4}$ |

**First clue**

$$9 * 3 = 3 * 9$$

* could be ___, ___, ___, ___, ___, ___, ___, ___, ___, or ___.

**Second clue**

$$4 * 6 = 0$$

* could be _____ or _____.

**Third clue**

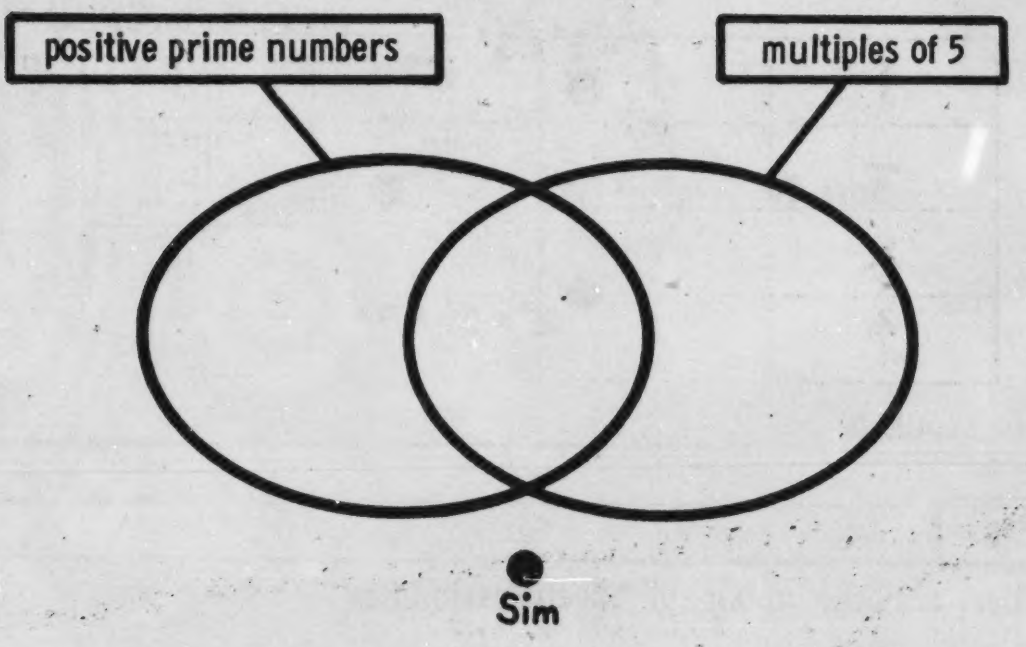
$$-7 * 29 = 1$$

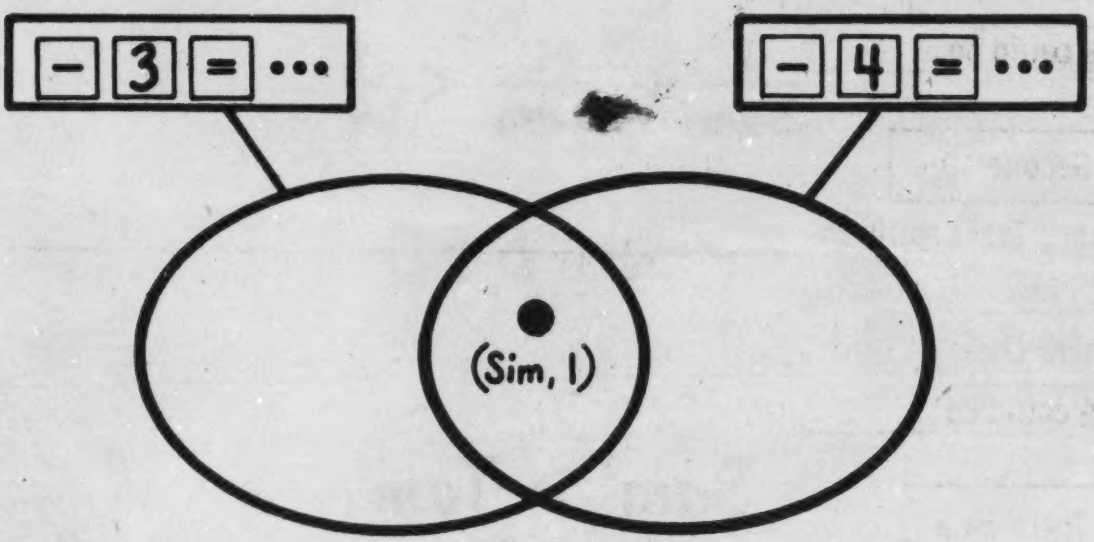
* is _____.

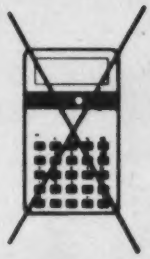


218

Sim is a secret number between 2 and 80.



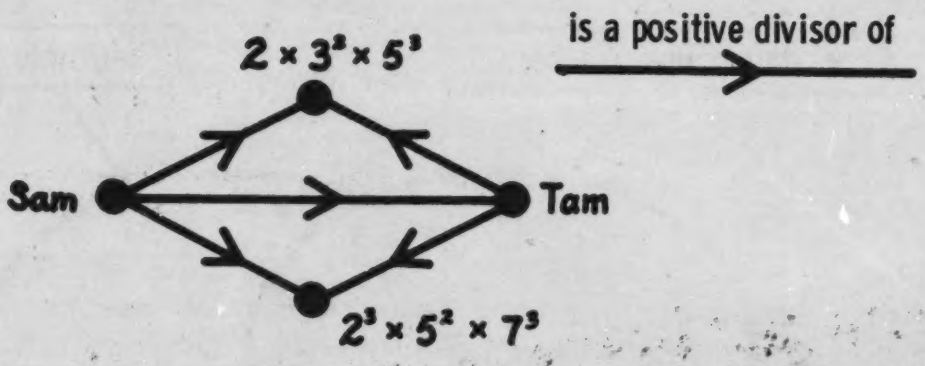



Who is Sim? _____

Sam and Tam are two different secret numbers.

**First clue**




(Sam, Tam) could be _____

_____

_____

(Hint: There are between ten and fifteen possibilities for (Sam, Tam).

**Second clue**

$$\frac{1}{Sam} + \frac{1}{Tam} < \frac{1}{4}$$

(Sam, Tam) could be _____.

**Third clue**

$$Sam^3 > Tam^2$$

(Sam, Tam) is (___, ___).

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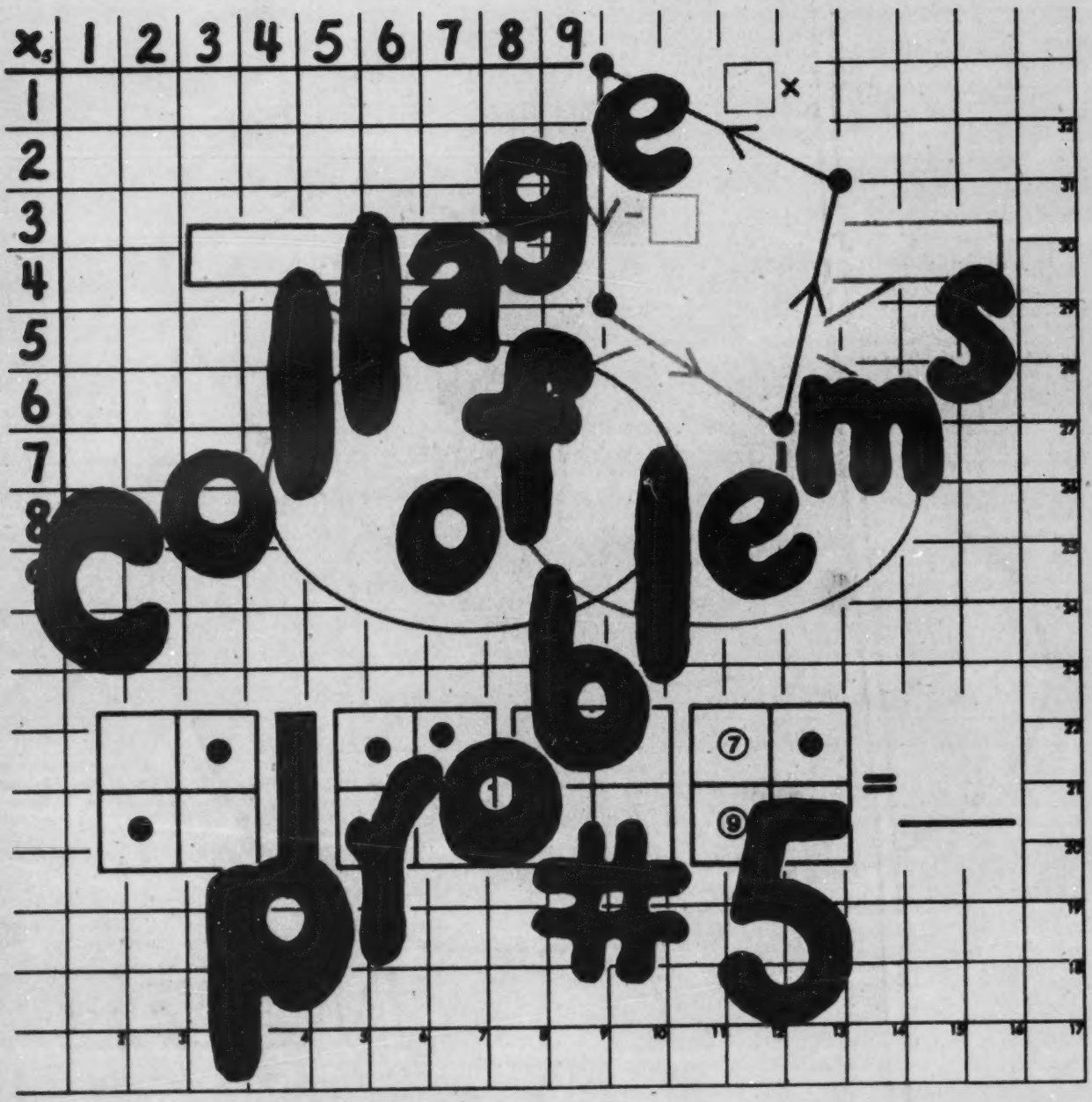
Name _____

6-40001



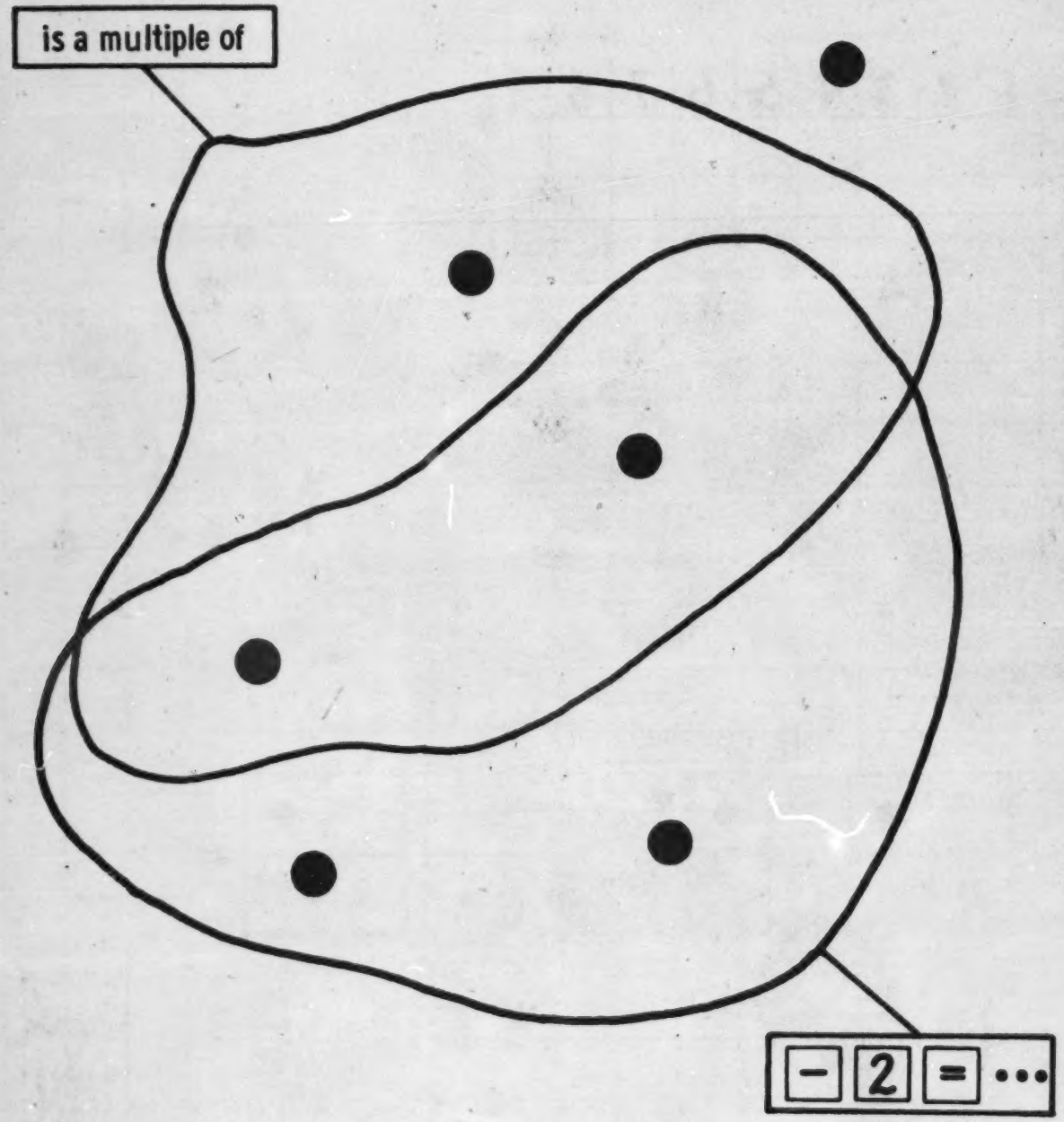



MAY 16 1980

Put these ordered pairs into the string picture.

(21, 7) (42, 12) (40, 8)

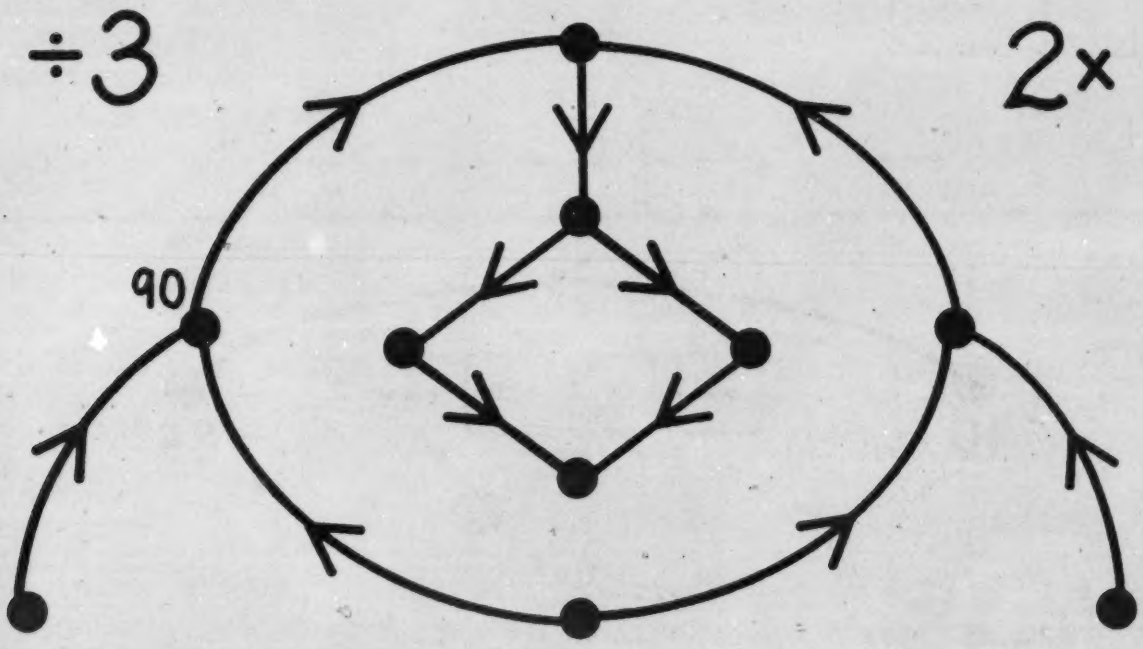
(25, 8) (100, 5) (29, 9)



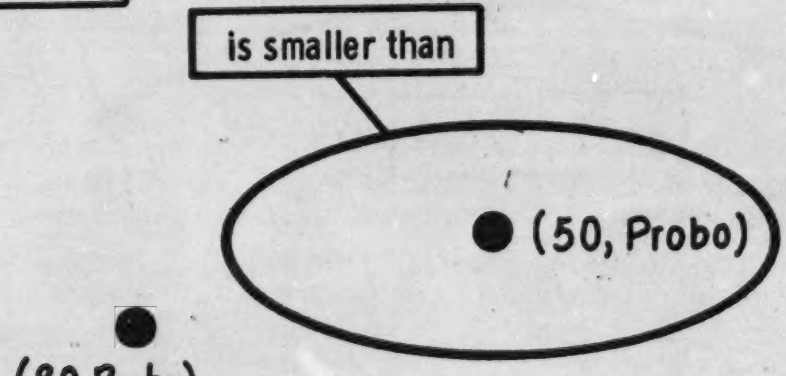
Probo is a secret number.

**First clue**

Probo is in this arrow picture. Label the dots.

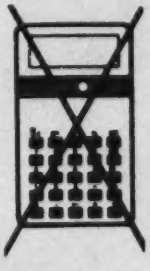



**Second clue**

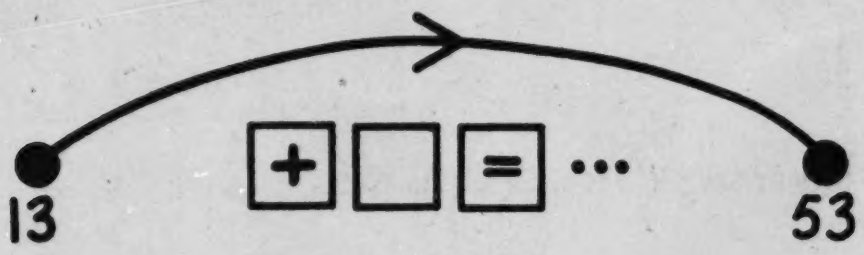



Probo is _____.

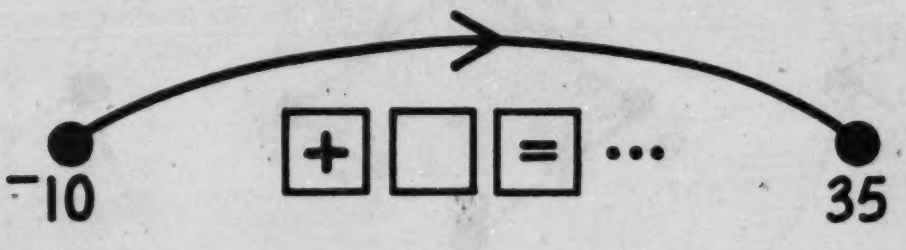
3233



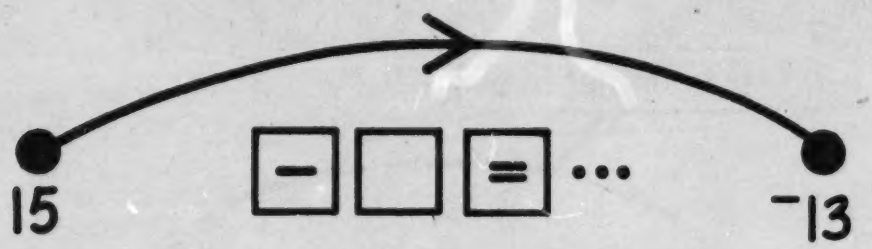
For each problem, list at least four <u>whole</u> numbers which could be in the box.




____, ____, ____, ____




____, ____, ____, ____

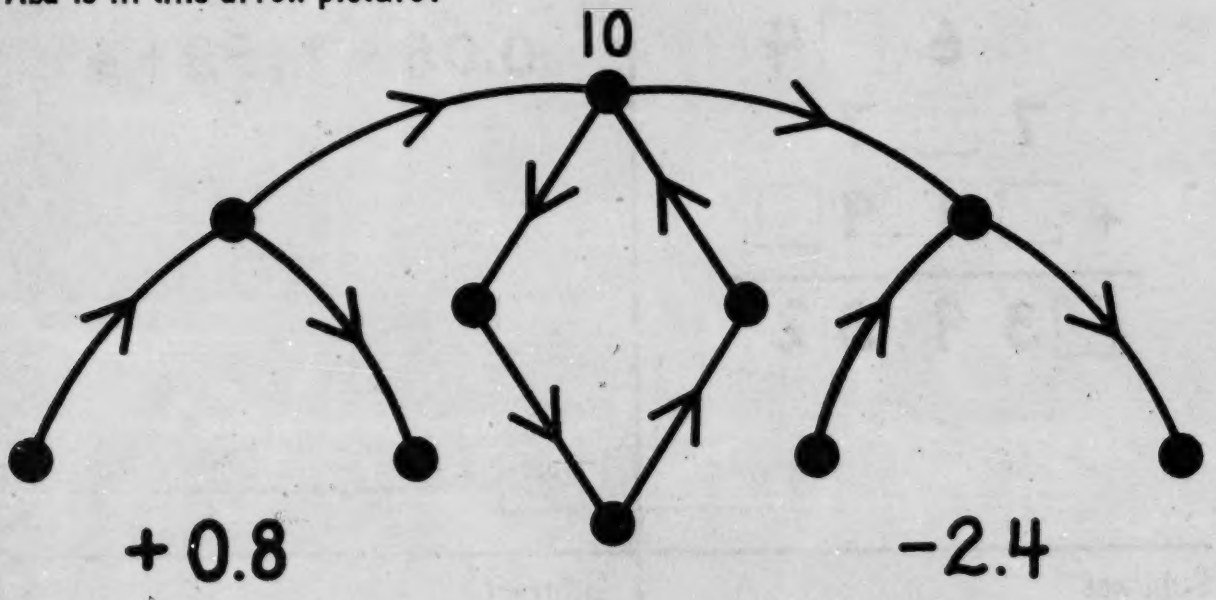



____, ____, ____, ____

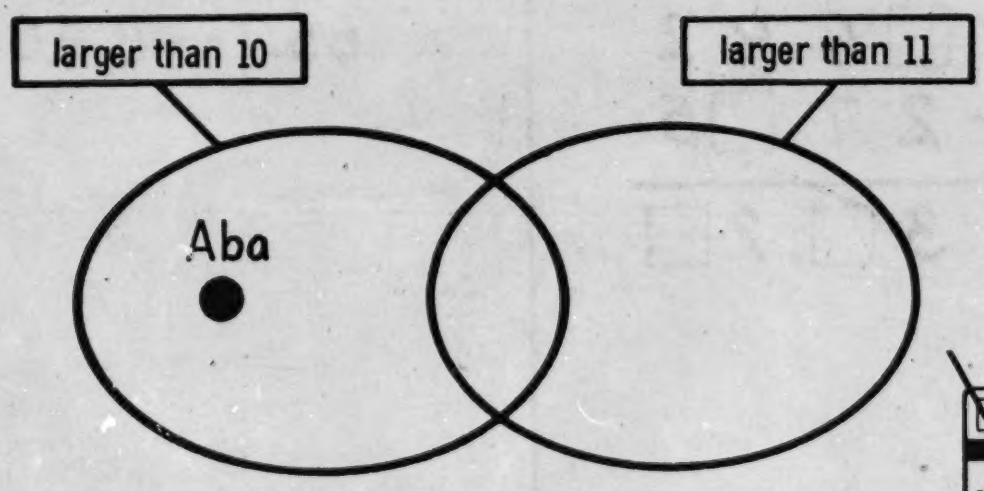
Aba is a secret number.

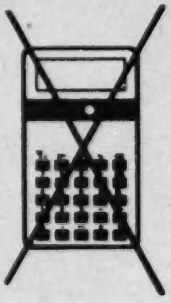
**First clue**

Aba is in this arrow picture.




**Second clue**



Who is Aba? _____

Complete the calculations. Show your work.

**Add**

$$\begin{array}{r} 6.\square 4 \\ 7\square.7 \\ +\square 1.9\square \\ \hline \square 39.32 \end{array}$$

**Add**

$0.08 + 7.153 + 64$

_____

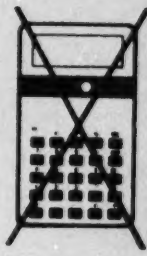
**Subtract**

$$\begin{array}{r} \square 6.92 \\ -27.\square 5 \\ \hline 3\square.2\square \end{array}$$

**Subtract**

$65.7 - 8.46$

_____



Fill in the boxes with these numbers.

$\frac{8}{3}$ $\frac{9}{2}$ $\frac{5}{8}$

$\frac{5}{11}$ $\frac{13}{11}$ $\frac{37}{10}$

$0 < \square < \frac{1}{2} < \square < 1 < \square < 2$

$2 < \square < 3 < \square < 4 < \square < 5$

Write each number as a product of positive prime numbers.
One is done for you.

$280 = 2 \times 2 \times 2 \times 5 \times 7 = 2^3 \times 5 \times 7$

$42 =$ _____

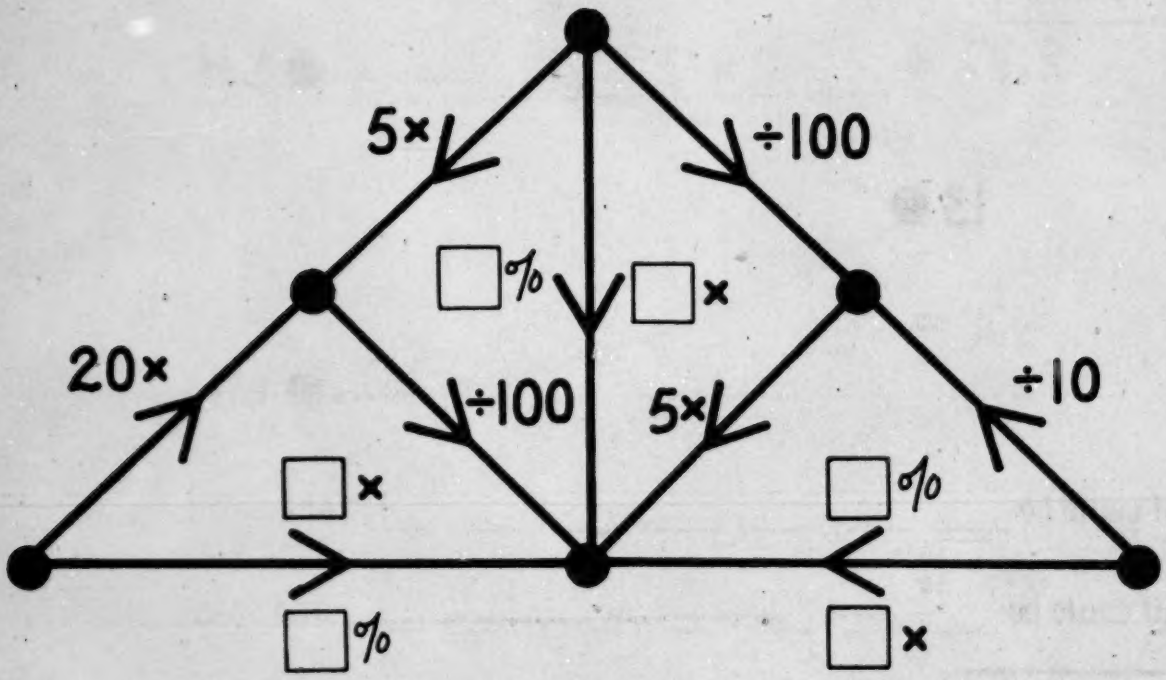
$90 =$ _____

$275 =$ _____

$392 =$ _____

Circle the two numbers in the above list which are <u>divisors</u> of $2 \times 3^3 \times 5^2 \times 7^2$.

Fill in the boxes for the arrows.




Complete.

20% of 30 = □

20% of □ = 30

5% of 80 = □

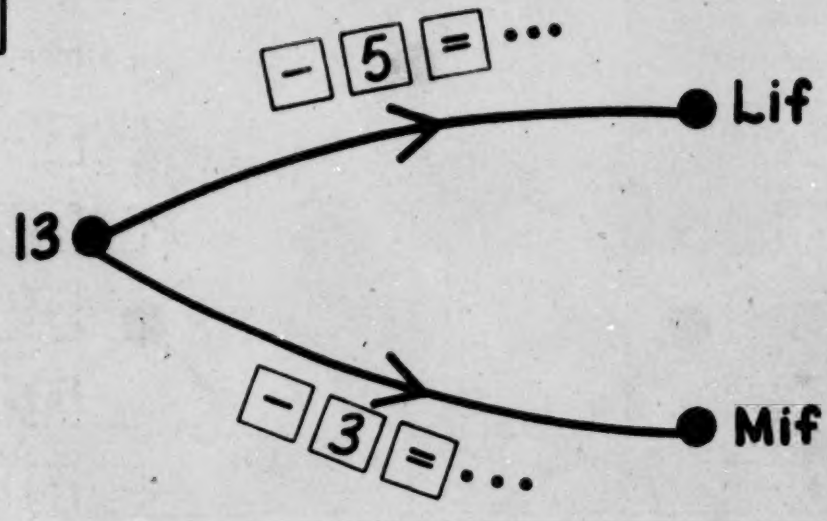
5% of □ = 80

50% of 24 = □

50% of □ = 24

(Lif, Mif) is a secret ordered pair.

**First clue**

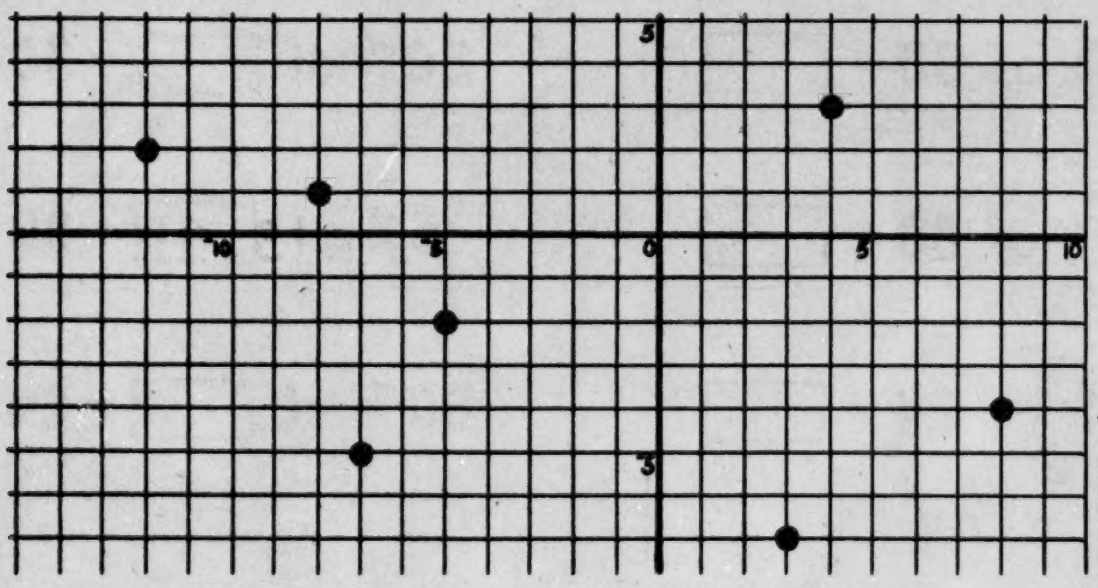



Lif could be ___, ___, ___, ___, ___, ___, ___, and so on.

Mif could be ___, ___, ___, ___, ___, ___, ___, and so on.

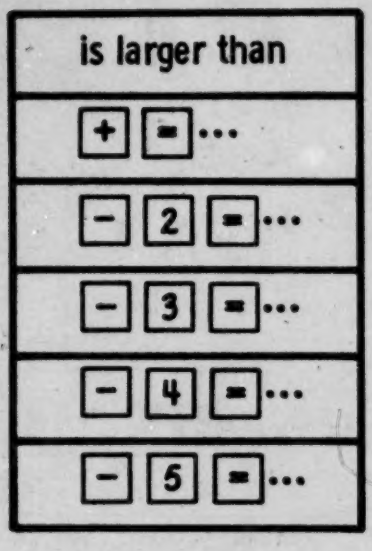
**Second clue**

(Lif, Mif) is one of the dots on this grid.

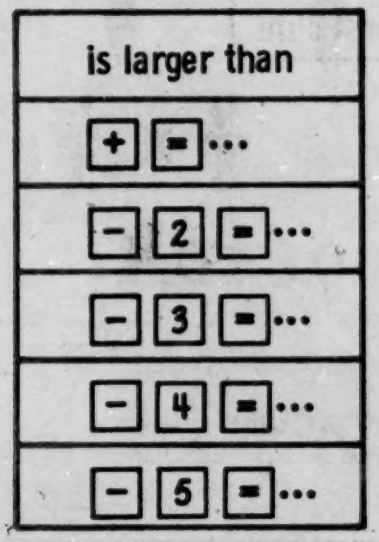



(Lif, Mif) = (____, ____)

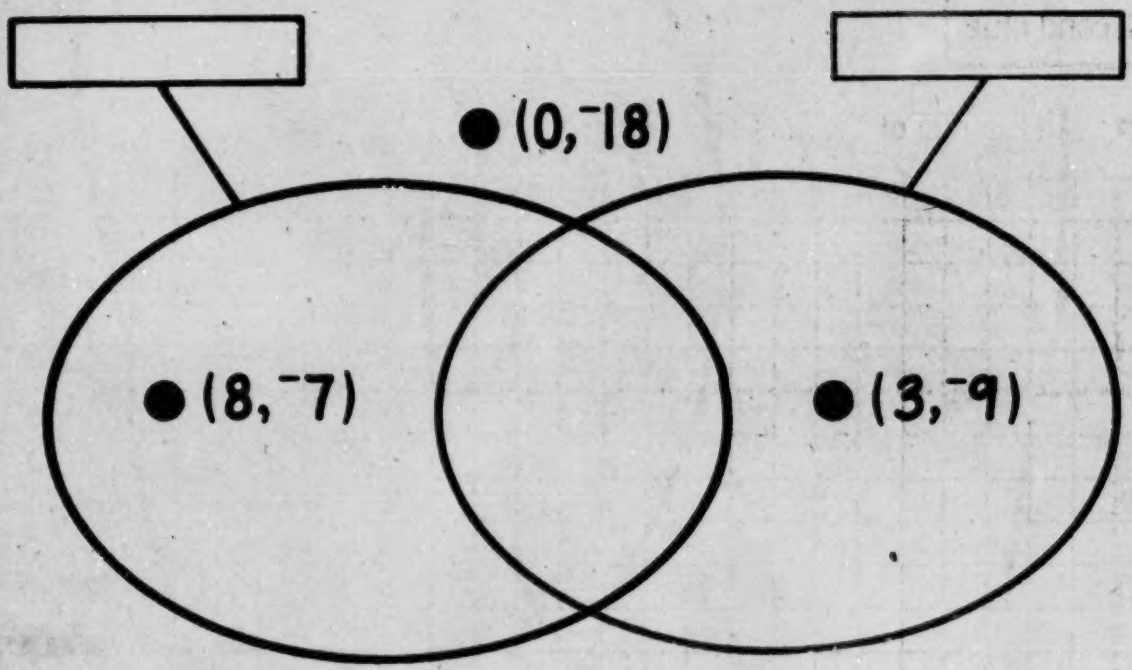
The red tag is one of these:




The blue tag is one of these:




Label the strings.

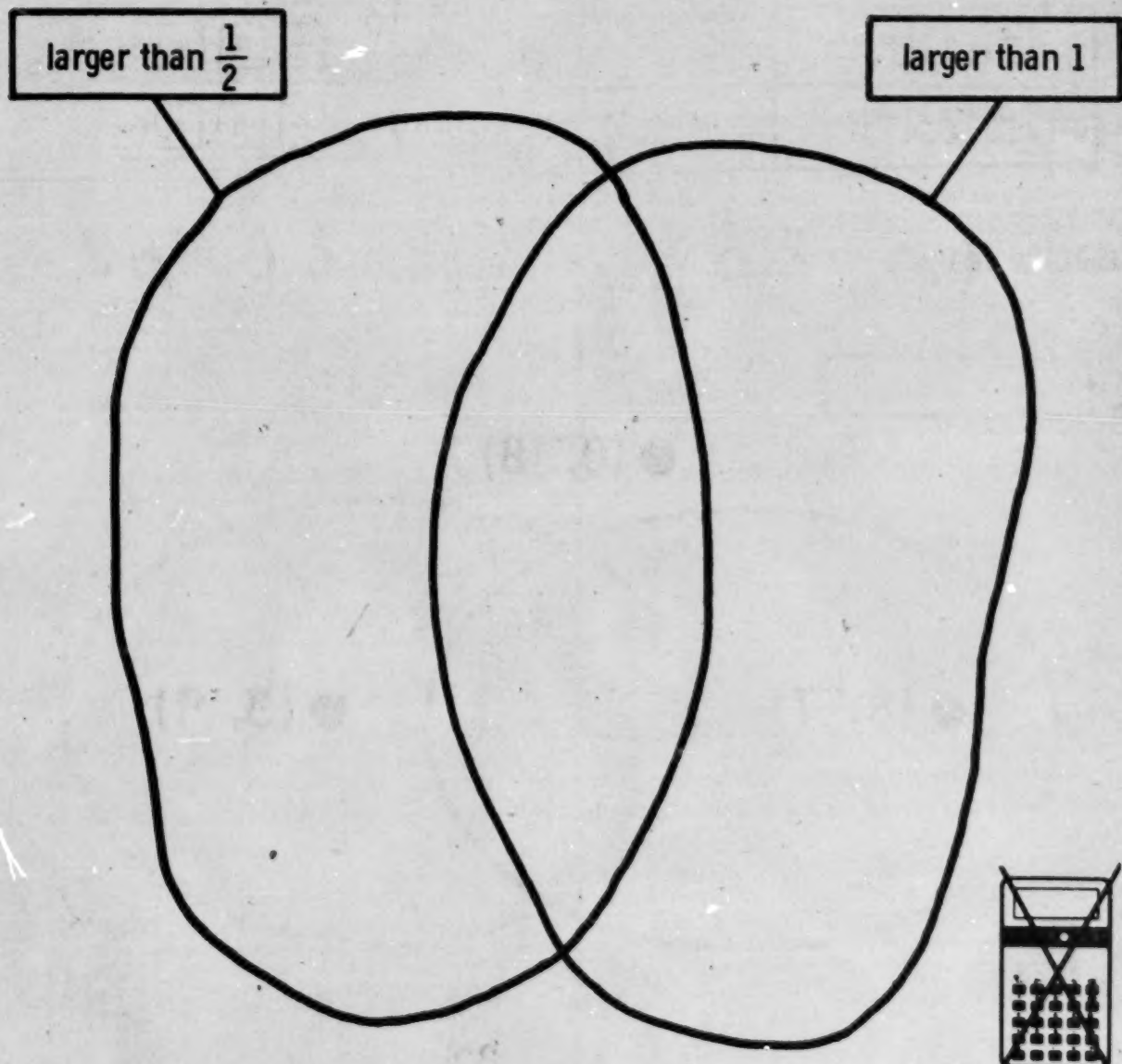


Put each of these numbers in the string picture.

$\frac{5}{3}$ $\frac{3}{7}$ $\frac{3}{5}+\frac{4}{5}$ $\frac{7}{8}-\frac{1}{8}$

$\frac{4}{3}\times\frac{1}{3}$ 0.6 0.07

0.8+0.4 1.39−0.6 7×0.4



Complete the calculations. Show your work.

**Multiply**

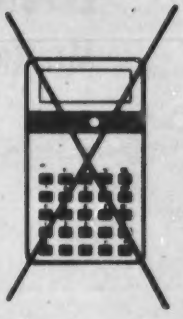
$63.8 \times 1.76$

**Divide**

$96.5 \div 2.5$

**Divide**

$12{,}852.6 \div 62$



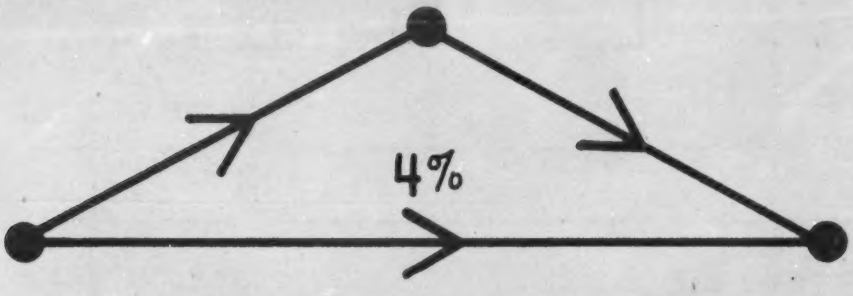
| BULLDOG BUS LINES TIMETABLE<br>From: Arolla To: Hill City | |
|---|---|
| City | Time |
| Arolla | 5:50 AM |
| Blue Springs | 7:30 AM |
| Cheyenne | 8:10 AM |
| Davis | 10:30 AM |
| El Pardo | 1:20 PM |
| Franklin | 3:10 PM |
| Gaston | 5:10 PM |
| Hill City | 7:40 PM |

1. Ruby is taking a 4 hour, 40 minute bus ride starting from Davis.
   To which city is she going? _____
   After a 5 hour, 50 minute bus ride, Nick arrives at El Pardo.
   From which city did he start? _____

2. Mr. Holtz drives the bus from Arolla to El Pardo. Ms. Melton drives from El Pardo to Hill City. If each receives $6.00 per hour, how much does Mr. Holtz earn each day? _____ Ms. Melton? _____

Use the arrow picture to help solve each problem. Label the dots and arrows; then answer the questions.

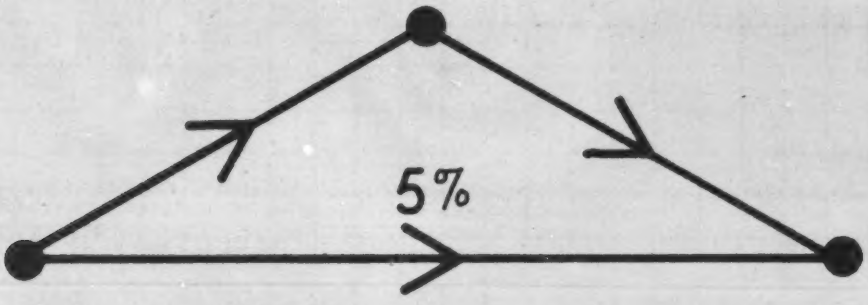
1. Norma buys a skateboard marked $24 and then pays 4% sales tax.




How much tax does Norma pay? _____

What is her total bill? _____

2. Ms. Hummel buys a bicycle for her son and her tax is $4.50. The tax rate is 5%.




How much did the bicycle cost (without tax)? _____

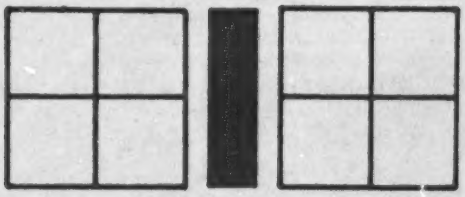
What is the total bill? _____

(So, Lo) is a secret ordered pair of numbers.

**First clue**

So can be put on the Mini-computer by placing exactly one (3)-checker on this board.

Lo can be put on the Mini-computer by placing exactly one (4)-checker on this board.

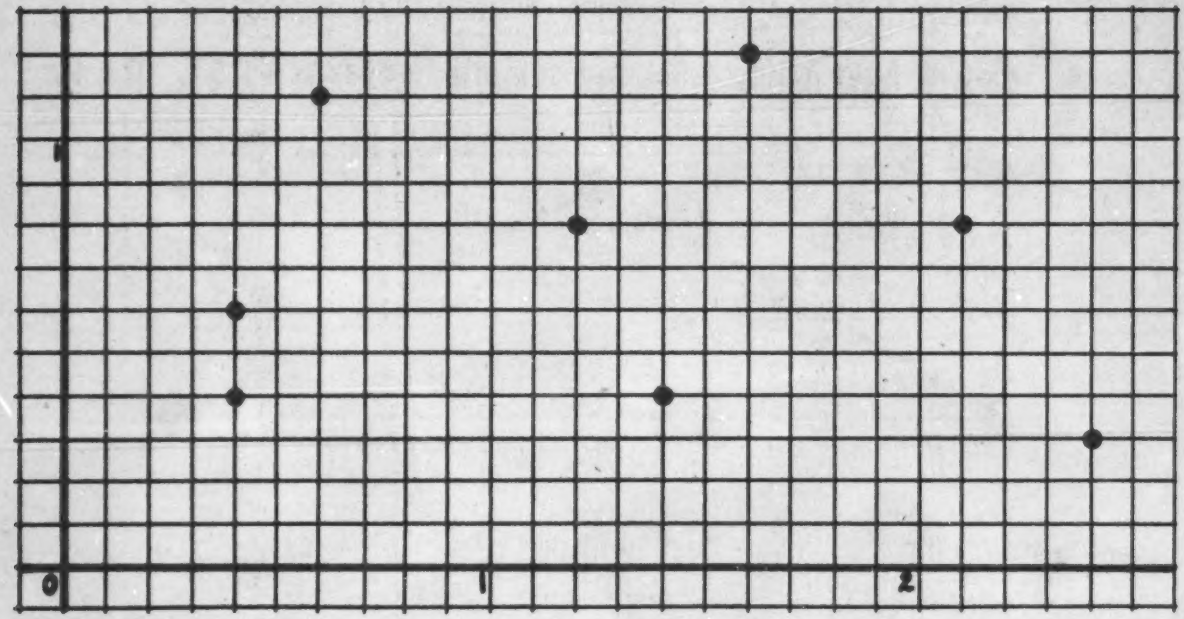


So could be _____, _____, _____, or _____.

Lo could be _____, _____, _____, or _____.

**Second clue**

(So, Lo) is one of the dots on this grid.




(So, Lo) = (_____, _____)

A farmer must carry a fox, a goose, and a basket of cabbage across a river. The farmer's rowboat is large enough for the farmer and only <u>one</u> item. The farmer cannot leave the goose and cabbage together because the goose will eat the cabbage. Also, the fox and goose cannot be left together (for obvious reasons). Describe how the farmer can get all three items across the river safely. Try to use as few trips as possible.

Write above each arrow what the farmer carries. You may not need all the arrows.

First trip across

First return trip

Second trip across

Second return trip

Third trip across

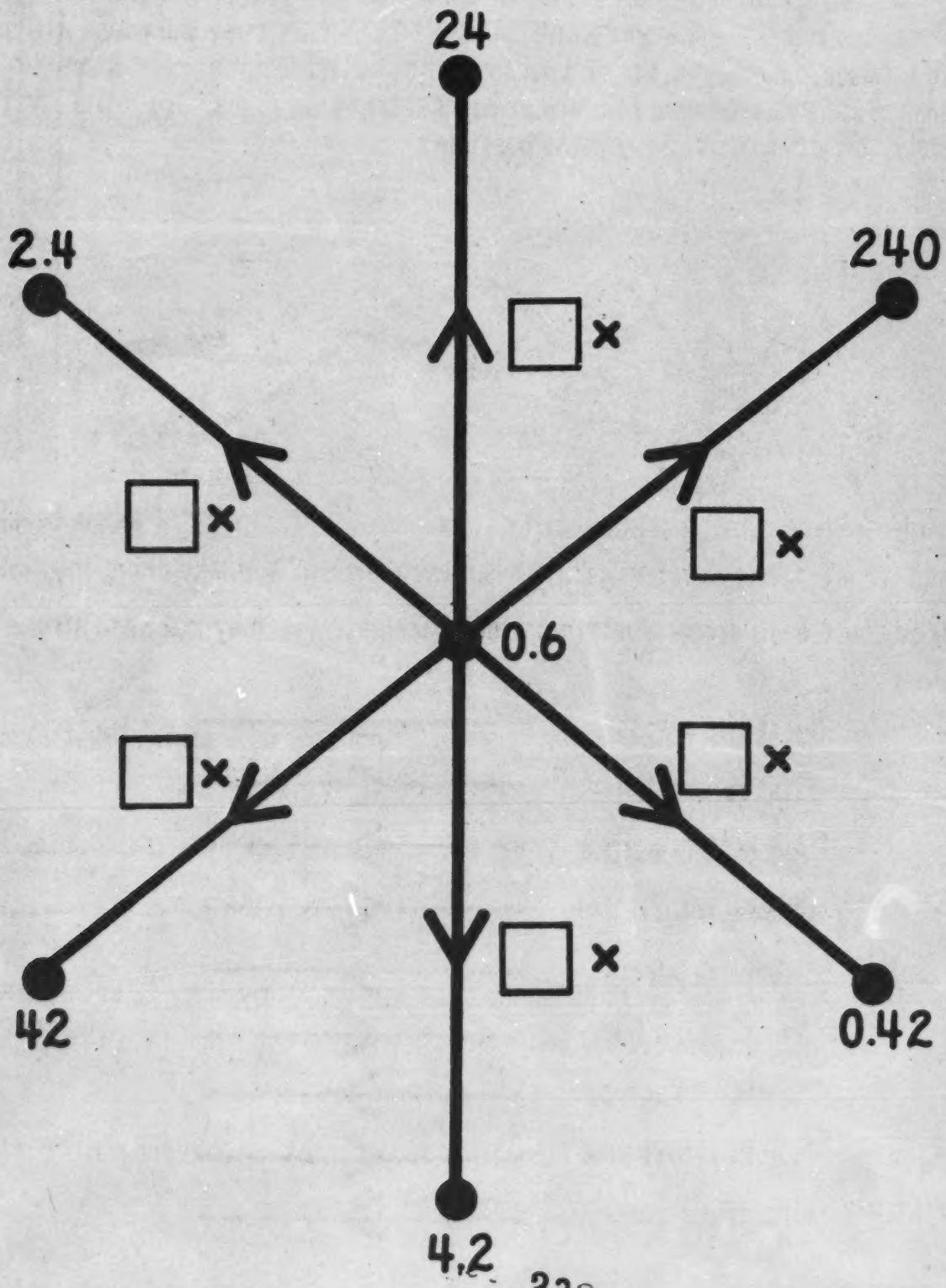
Third return trip

Fourth trip across

Fourth return trip

Fifth trip across

Fill in the boxes for the arrows.

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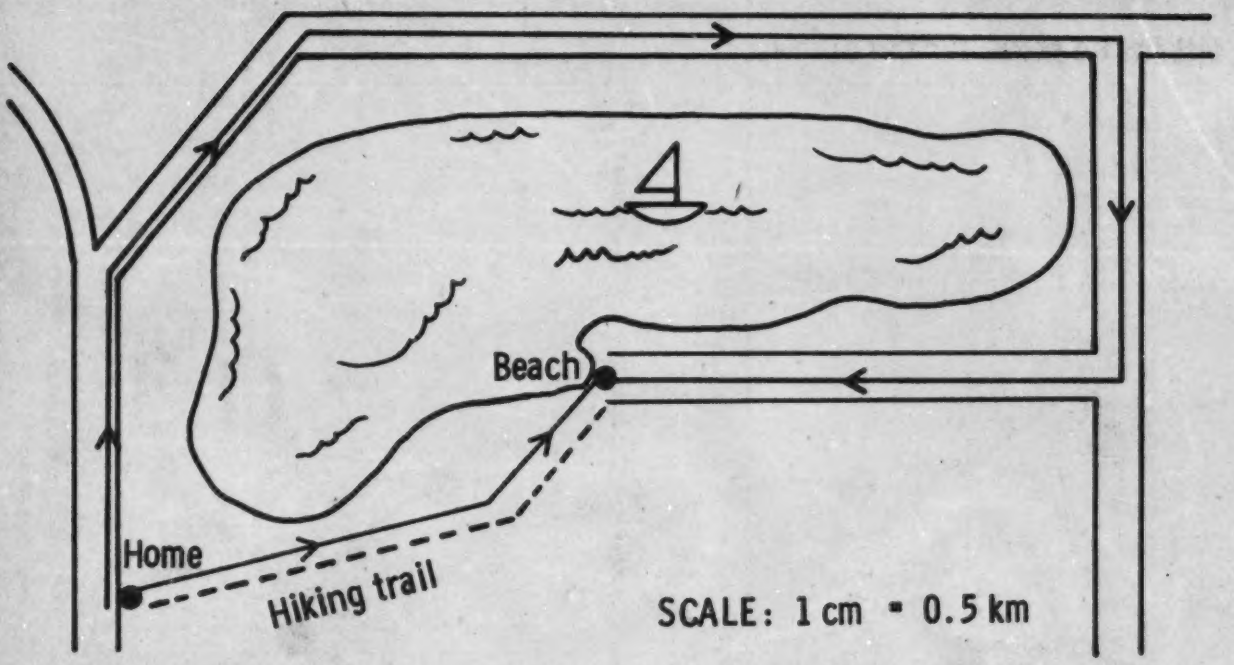



Leticia enjoys running on the hiking trail (blue) from her home to the beach. Her brother, Tony, prefers riding his bicycle around the lake along the route marked in red.

Complete.

| | Length of route on map | Real distance traveled |
|---|---|---|
| Leticia (blue) | _____ cm | _____ km |
| Tony (red) | _____ cm | _____ km |

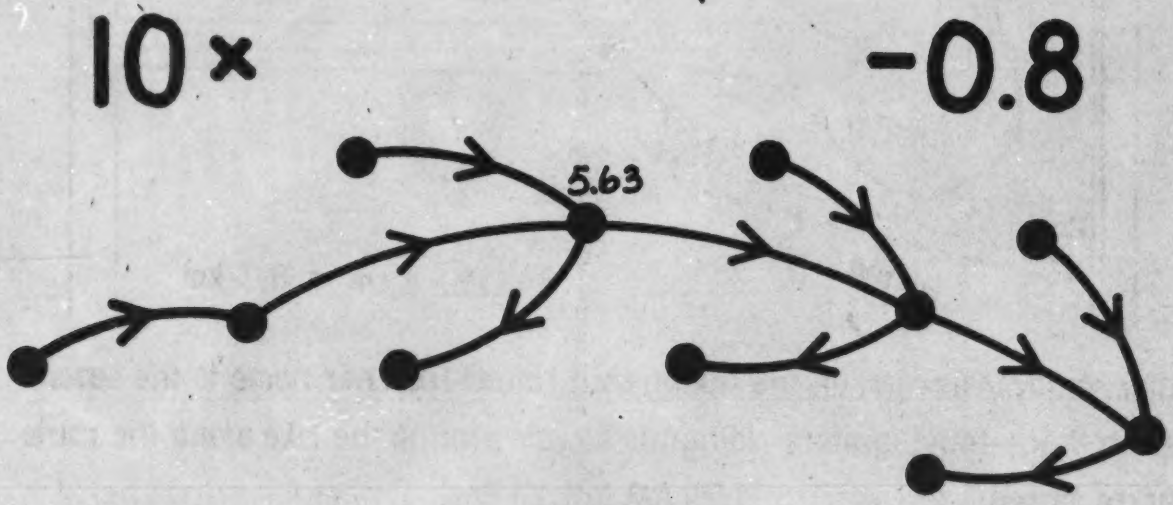
Leticia runs at an average of 10 km in one hour and Tony rides 20 km in one hour. About how long does it take Leticia to run on the hiking trail from her home to the beach? _____ minutes

About how long does Tony take to ride his bicycle on the roads from his home to the beach? _____ minutes

Vun is a secret number.

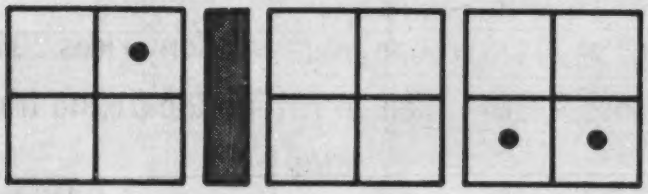
**First clue**

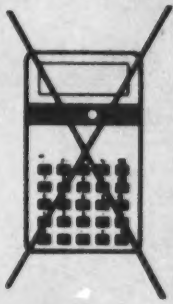
Vun is in this arrow picture.




**Second clue**

Vun can be put on this Minicomputer by adding just this checker: ③.





Vun is _____.

20

240

| EARL'S PARKING LOT |
| --- |
| \$0.30 for each $\frac{1}{4}$ hour |

How much does it cost to park a car for 1 hour? _____

10 hours? _____

About how long was a car parked if the charge is \$0.90? _____

\$3.00? _____

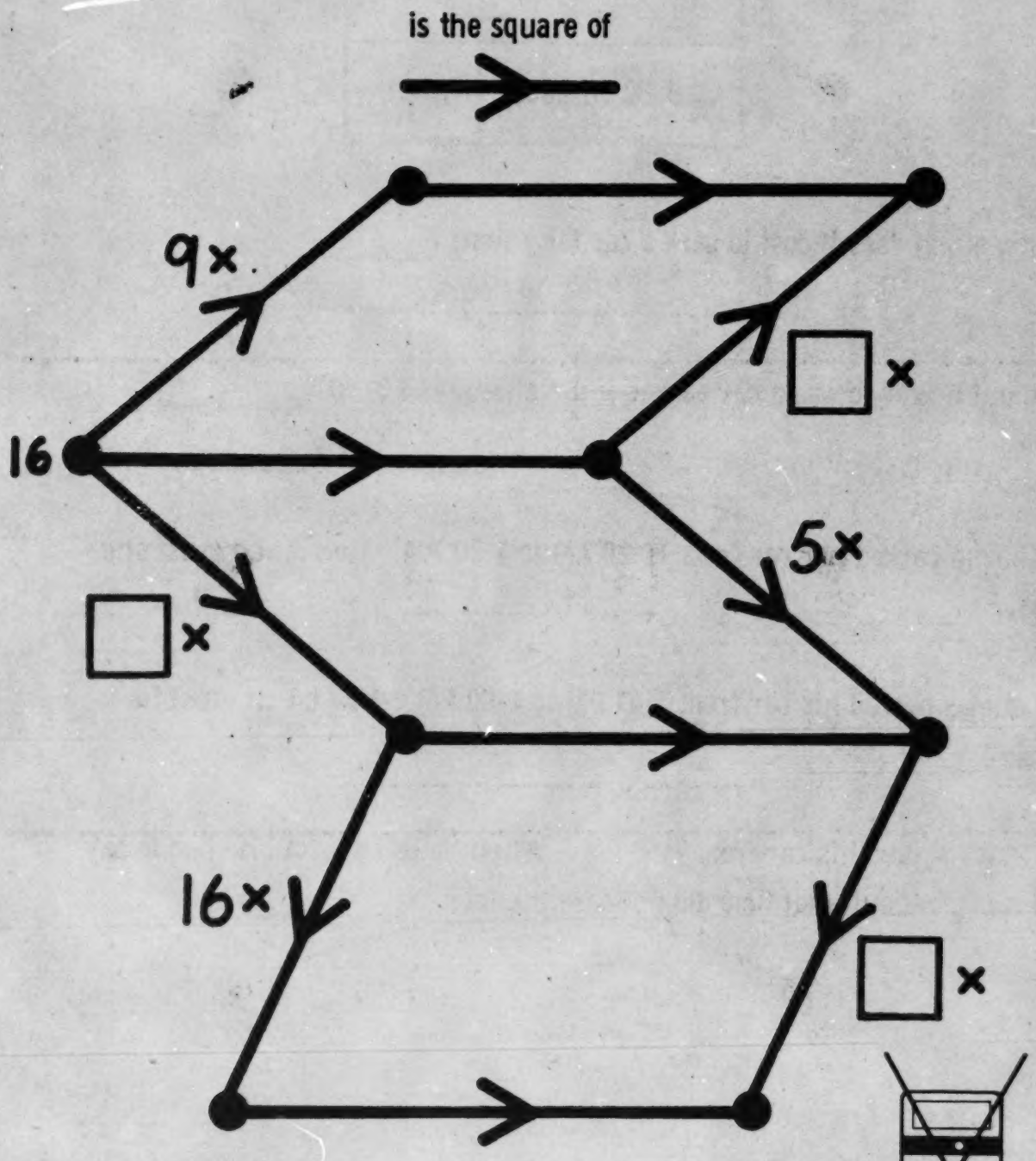
Sharon parked her car from 11:20 AM to 1:20 PM. How much must she pay? _____

Douglas parked his car from 5:45 PM to 7:00 PM. How much must he pay? _____

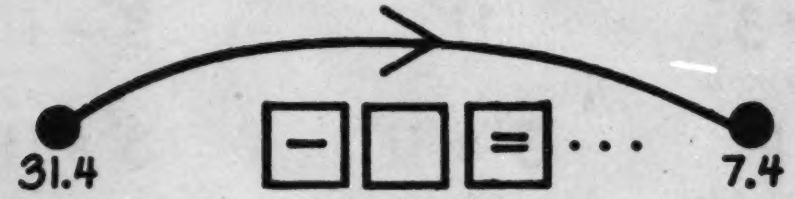
Carlos parked his car from 7:50 PM. When he left the lot, he had to pay \$0.60. About what time did he leave the lot? _____

The dots are for positive numbers.

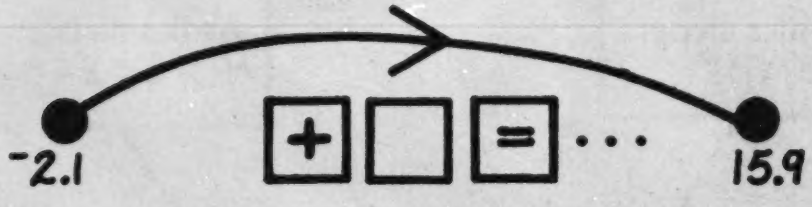
Label the dots and fill in the boxes for the blue arrows.



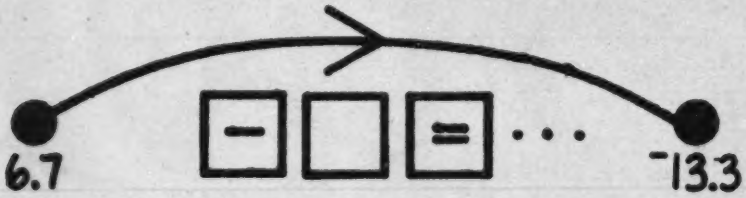
For each problem, list at least three <u>whole</u> numbers which could be in the box.




_____, _____, _____




_____, _____, _____



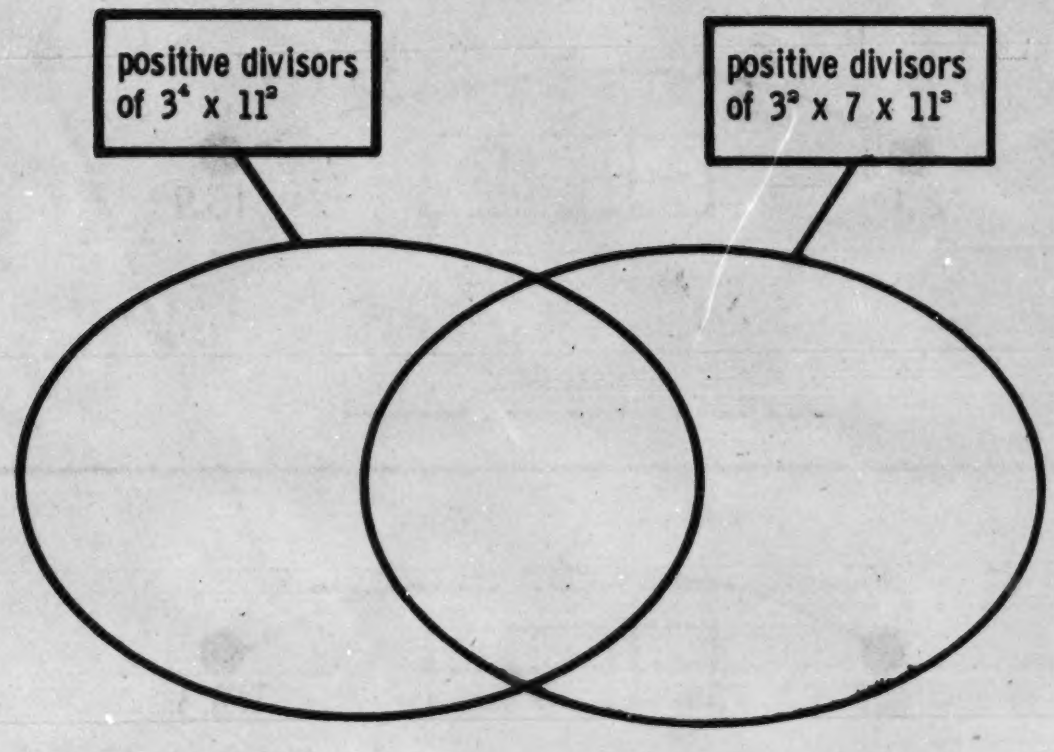

_____, _____, _____

Put these numbers in the string picture.

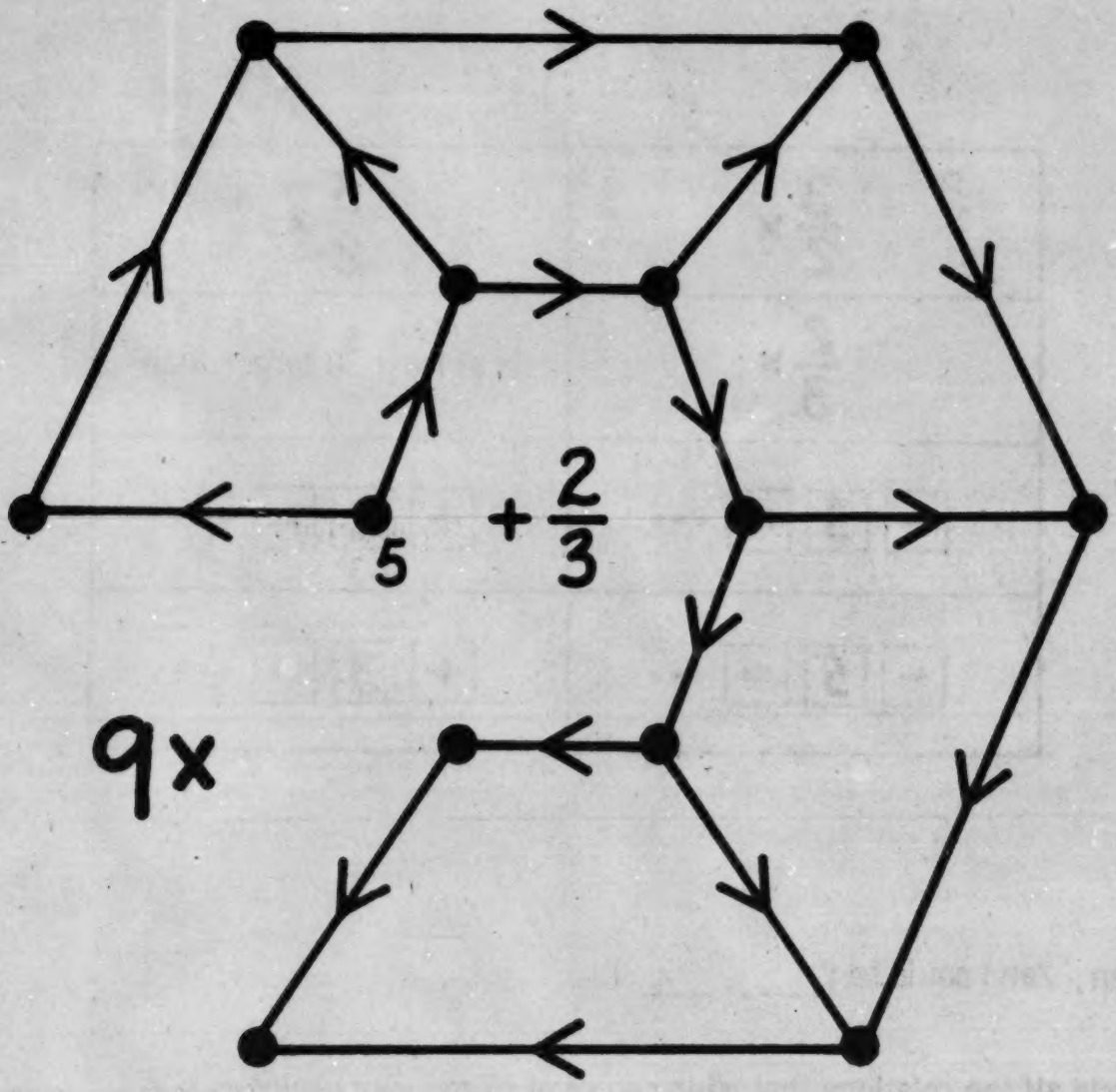
$2 \times 3^2$ $\quad 11^3 \quad$ $3^2 \times 11^2$

$11^2 \quad 3^4 \times 11^3 \quad 3^3 \times 11$

$3^4 \quad 3^5 \quad 7 \times 11^2$



Label the dots and fill in the box for the gray arrows.




÷ □

Find an ordered pair, (Zen, Zan), which belongs to at least three of these relations. Many solutions are possible.

| | |
|---|---|
| $\frac{3}{2}\times$ | $\frac{5}{2}\times$ |
| $\frac{2}{3}\times$ | is at least 20 larger than |
| $\square - 3 = \square \cdots$ | $\square + 2 = \square \cdots$ |
| $\square - 5 = \square \cdots$ | $\square + 3 = \square \cdots$ |

(Zen, Zan) could be (____, ____).

Circle all the relations that your choice of (Zen, Zan) belongs to.

1. Toby is now three times as old as Leo. In eight years, Toby will be only twice as old as Leo. How old is Toby now? _____ Leo? _____

2.

| STATE THEATER |
| --- |
| NOW PLAYING: THE WILD AND CRAZY GUYS! |
| Adults: $3.00 |
| Children: $2.00 |

Theater owner: How many customers did we have tonight?
Ticket seller: Only 80.
Owner: How many adults?
Seller: I forgot to count how many.
Owner: Do you know how much money we received?
Seller: Yes, $184.
Owner: Good, then I can calculate how many adults came.

How many adults came to the movie? _____ How many children? _____

$$a * b = \left(\frac{1}{2} \times a\right) - b$$

Example: $6 * 5 = \left(\frac{1}{2} \times 6\right) - 5 = 3 - 5 = {}^{-}2$

Complete.

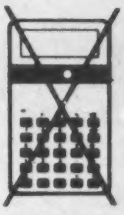
$12 * 3 = \square$ $\quad$ $2.5 * 0.5 = \square$

$23 * 8 = \square$ $\quad$ $7 * 5 = \square$

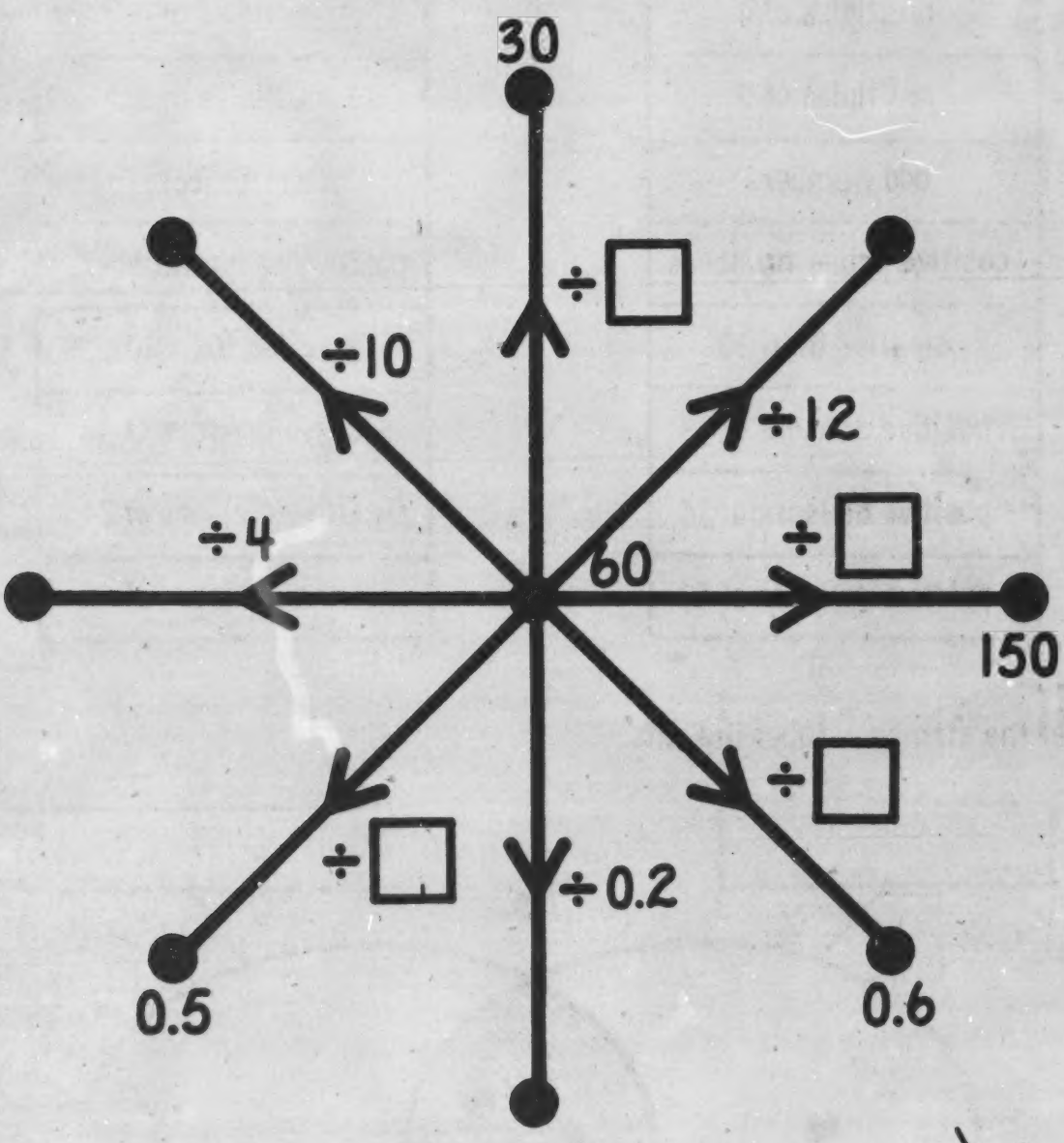
$10 * \square = 1.5$ $\quad$ $\square * 7 = 8$

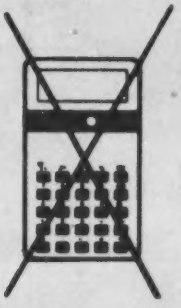
$26 * \square = 3$ $\quad$ $\square * 10 = 7$

$\frac{2}{3} * \frac{1}{4} = \square$ $\quad$ $\frac{4}{5} * \square = {}^{-}\frac{1}{5}$



bel the dots and fill in the boxes for the arrows.





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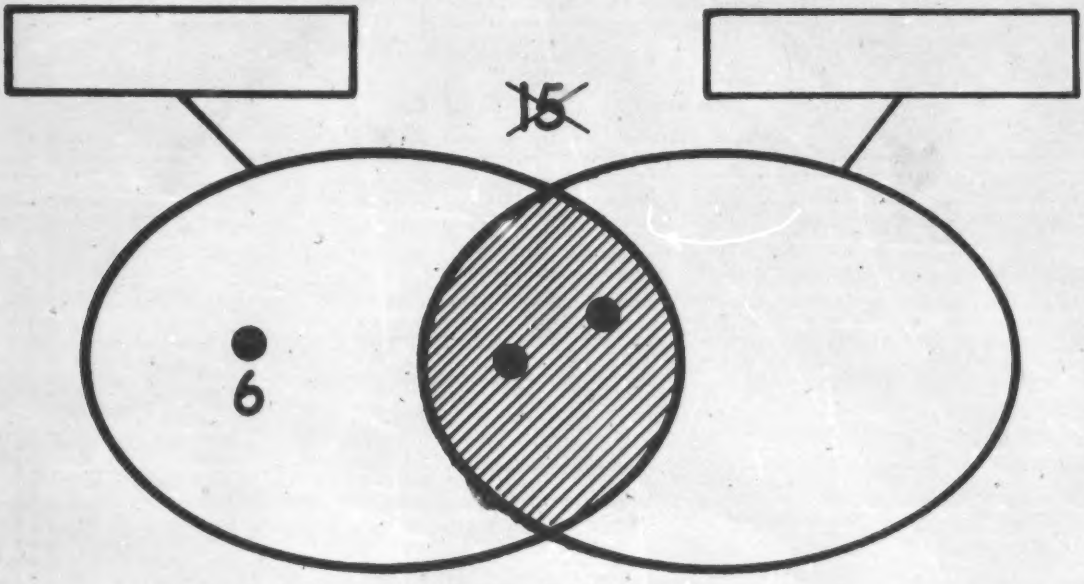
The red tag is one of these:

| |
|---|
| multiples of 3 |
| multiples of 4 |
| multiples of 5 |
| odd numbers |
| positive prime numbers |
| smaller than 10 |
| positive divisors of 18 |
| positive divisors of 24 |
| positive divisors of 40 |

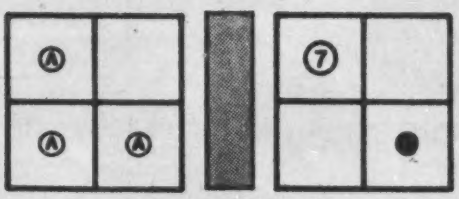
The blue tag is one of these:

| |
|---|
| multiples of 3 |
| multiples of 4 |
| multiples of 5 |
| odd numbers |
| positive prime numbers |
| smaller than 10 |
| positive divisors of 18 |
| positive divisors of 24 |
| positive divisors of 40 |

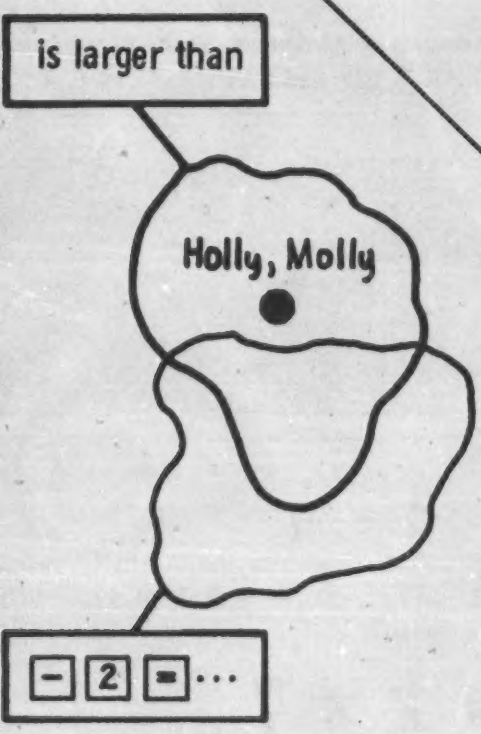
Label the strings. Label the dots.

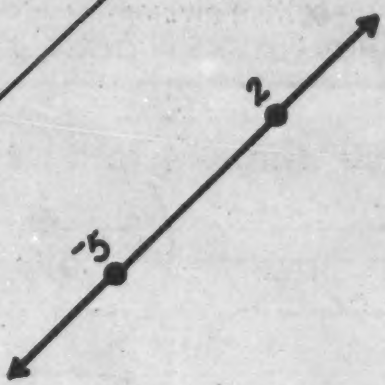


Holly and Molly are secret numbers.




Holly can be shown on this Minicomputer
by adding one ③ -checker.
Molly can be shown on this Minicomputer
by taking away one Ⓐ -checker.




(Holly + Molly) is in the blue part
of this number line.

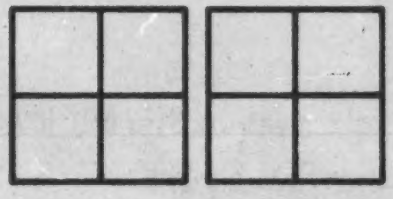
(Holly, Molly) is (___, ___).

251

Sly is a secret number.

**First clue**

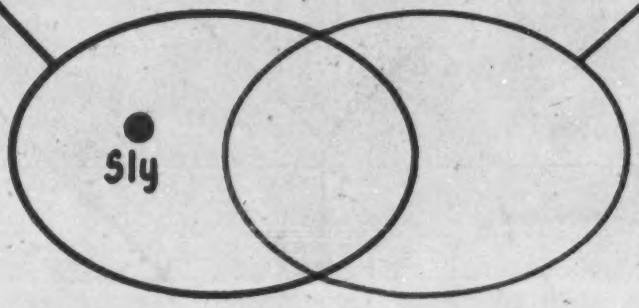
Sly can be put on this Minicomputer using exactly one of these checkers: ③ ⑨



Sly could be _____.

**Second clue**

positive divisors of $2^3 \times 3^2 \times 5$ | positive divisors of $2^2 \times 3^2 \times 5$




Sly could be _____, _____, _____, or _____.

**Third clue**

$$\text{Sly} \sqcup 14 = 3^2 \times 2^3 \times 7$$

Sly is _____.

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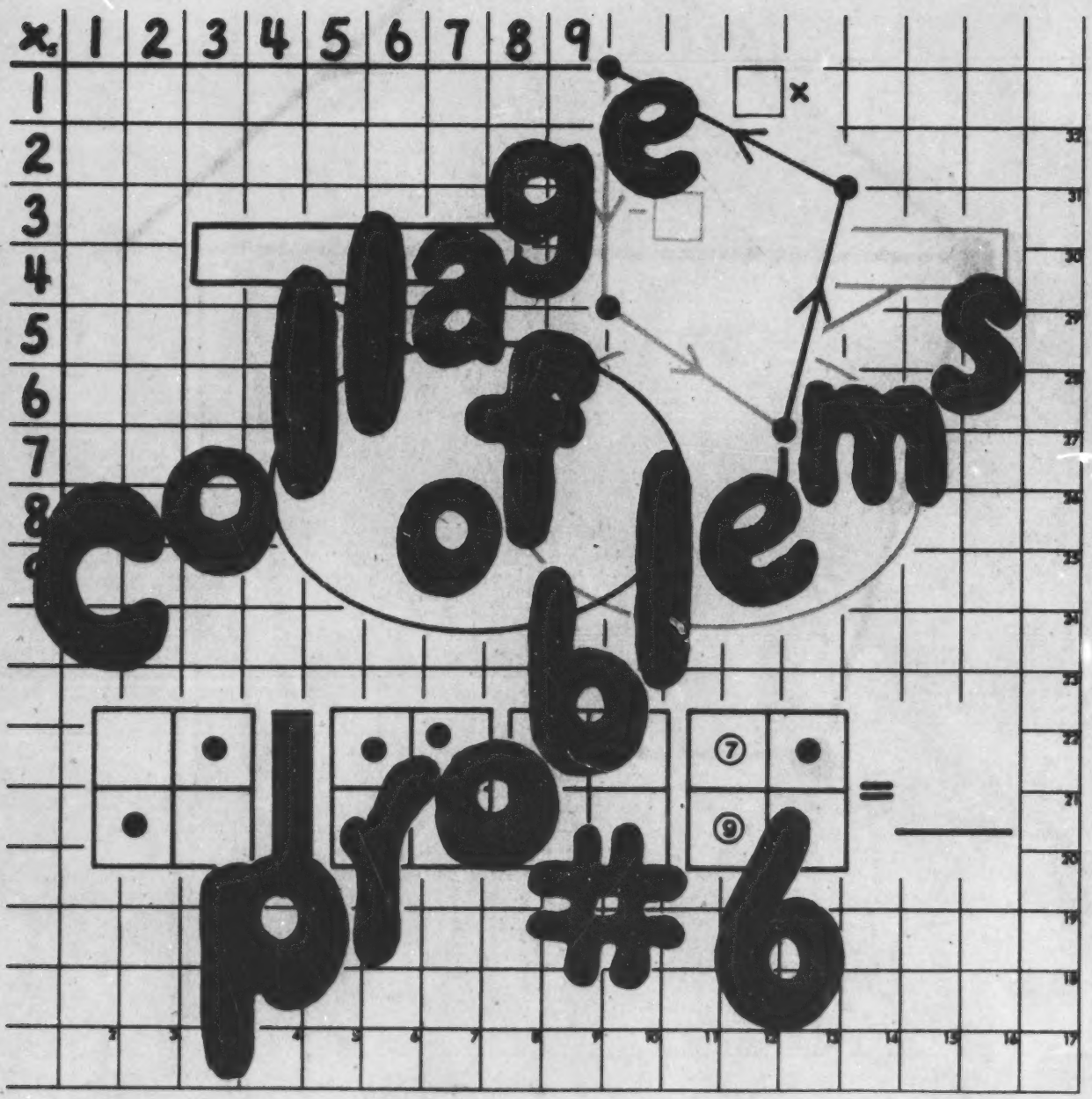
Name _____

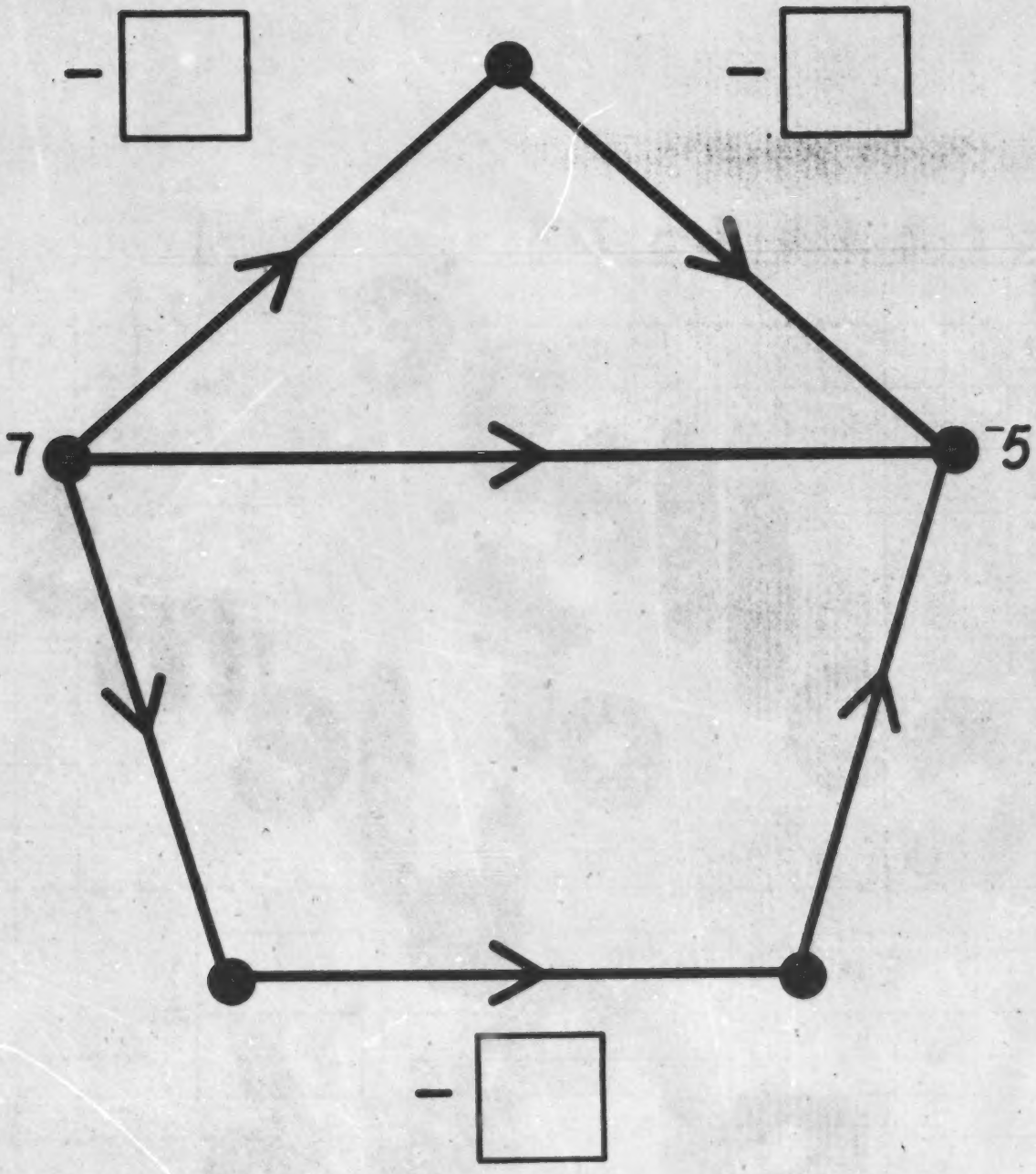
6-40101



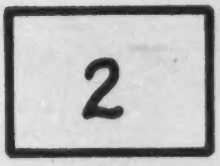


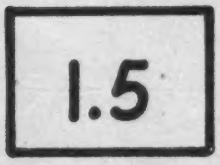

MAY 1 6 1980

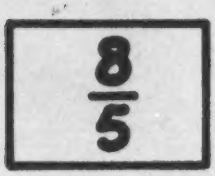
Fill in the boxes for the arrows. Label the dots.

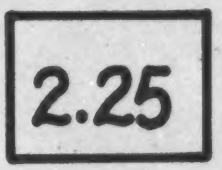


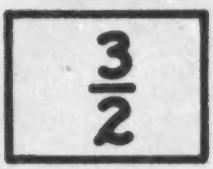
Pair the tags.

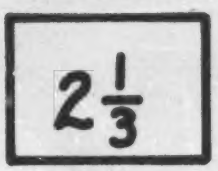




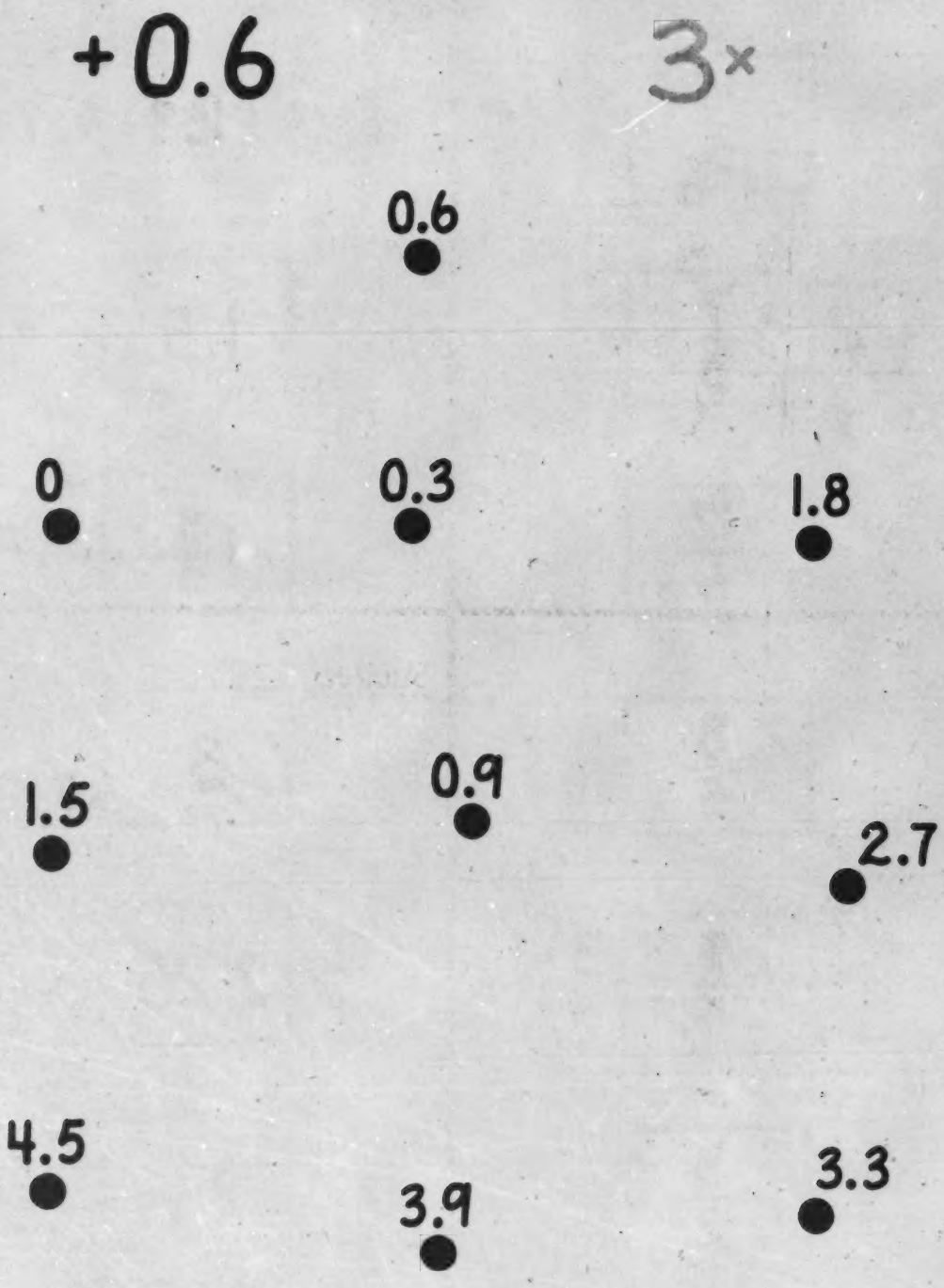




Draw all the red arrows and all the blue arrows you can between the dots in this picture.



Complete the calculations. Show your work.

Add

$$\begin{array}{r} \square.68 \\ \square 0.8\square \\ +23.\square 4 \\ \hline 98.05 \end{array}$$

Add

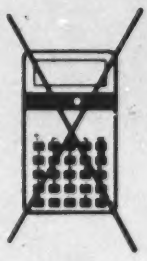
$$6.28 + 183 + 9.764$$

Subtract

$$\begin{array}{r} 4\square.733 \\ -\ 4.\square\square 9 \\ \hline 37.04\square \end{array}$$

Subtract

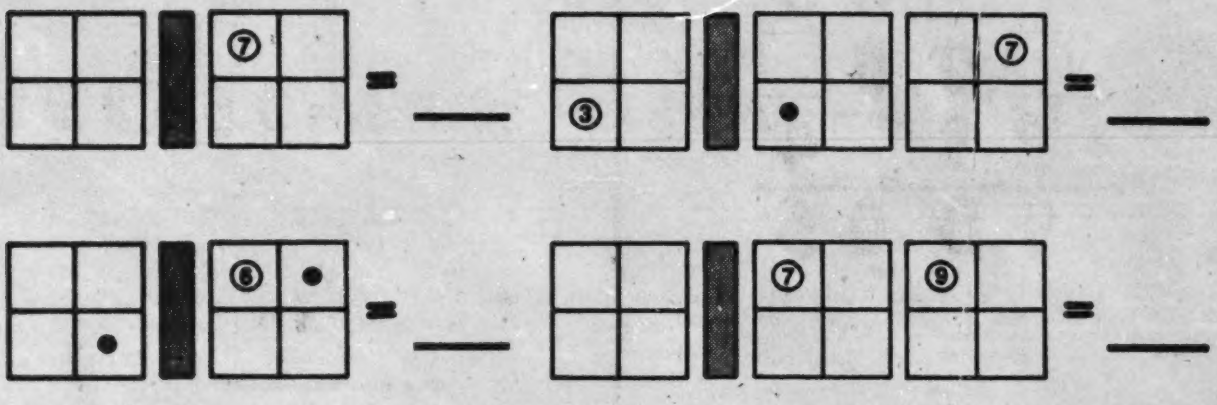
$$328 - 63.2$$



Vim is a secret number.

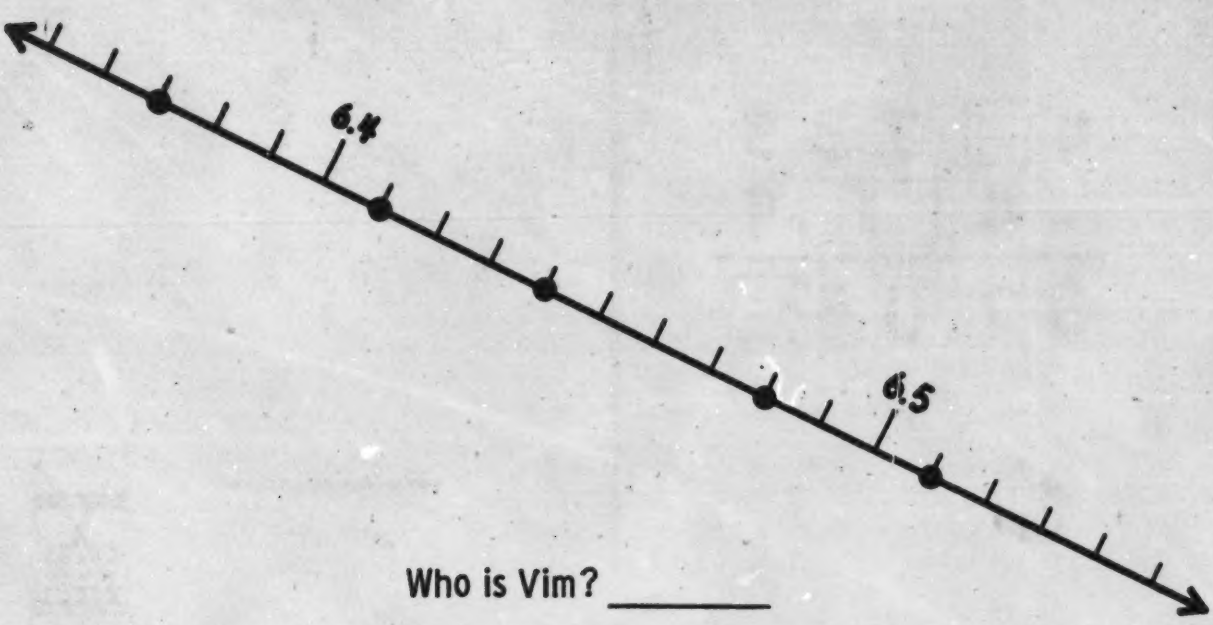
**First clue**

Vim is one of these numbers.




**Second clue**

Vim is one of the dots on this number line. Label the dots.




Who is Vim? _____

All of these calculations are correct, except that the decimal points are missing in the answers. Place a decimal point in each answer to make a true number story.

$$64.8 + 395.37 + 426 + 2.77 = 88894$$

$$650.27 + 5.045 + 3{,}188.6 + 38.125 = 388204$$

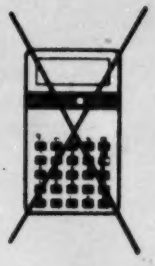
$$207.621 - 8.93 = 198691$$

$$27{,}825.276 - 27{,}654.876 = 1704$$

$$62.3 \times 21.8 = 135814$$

$$104.15 \times 7.38 = 768627$$

$$28 \times 0.47 = 1316$$



Pair the tags.

| | |
|---|---|
| $\frac{9}{10} + \frac{3}{10}$ | 0.6 |
| $\frac{9}{10} - \frac{3}{10}$ | $\frac{1}{6}$ |
| $\frac{2}{3} + \frac{1}{2}$ | $\frac{9}{8}$ |
| $\frac{2}{3} - \frac{1}{2}$ | $1\frac{2}{10}$ |
| $\frac{3}{4} \div \frac{2}{3}$ | $\frac{1}{2}$ |
| $\frac{3}{4} \times \frac{2}{3}$ | $1\frac{1}{6}$ |



260

Use the given information to help solve these problems.

20% of $350 = $70
6% of $350 = $21

26% of $350 = ☐

14% of $350 = ☐

60% of $350 = ☐

18% of $350 = ☐

100% of $350 = ☐

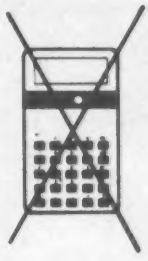
106% of $350 = ☐

☐ % of $350 = $140

☐ % of $350 = $35

☐ % of $350 = $420

☐ % of $350 = $700



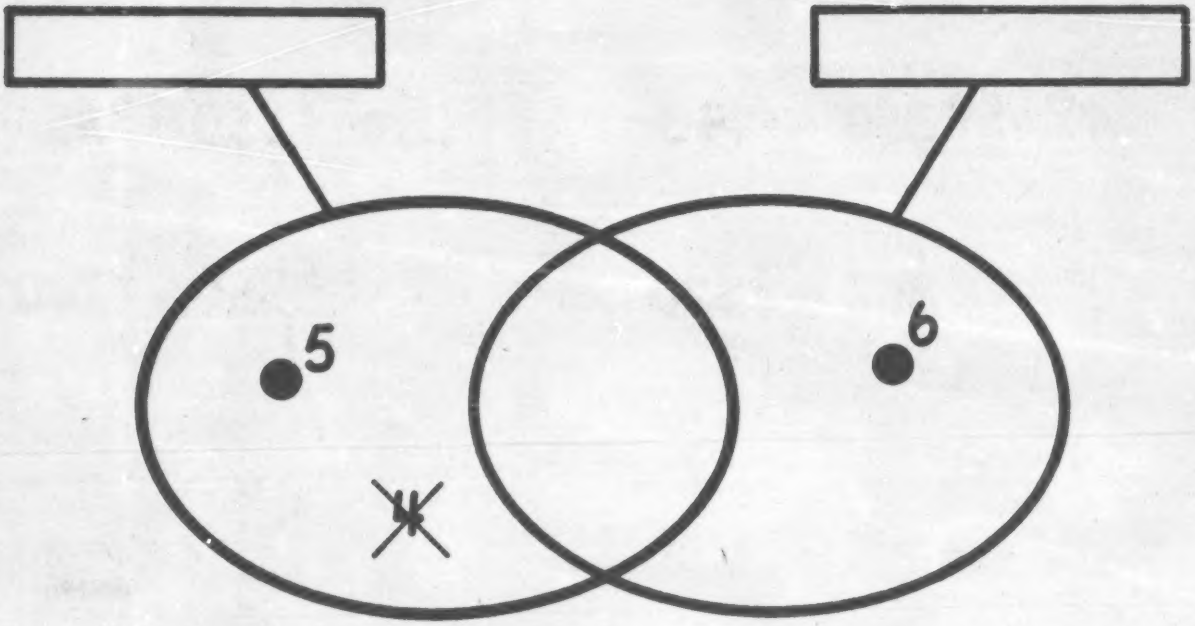
The red tag is one of these:

| |
|---|
| multiples of 2 |
| multiples of 3 |
| larger than 10 |
| smaller than 10 |
| positive divisors of 18 |
| positive divisors of 20 |

The blue tag is one of these:

| |
|---|
| multiples of 2 |
| multiples of 3 |
| larger than 10 |
| smaller than 10 |
| positive divisors of 18 |
| positive divisors of 20 |

Label the strings.



Fill in each box with " < ", " > ", or " = ".

$1,346 \div 27 \quad \square \quad 1,346 \div 11$

$\frac{3}{5} \quad \square \quad \frac{3}{11}$

$\frac{4}{9} \quad \square \quad 0.5$

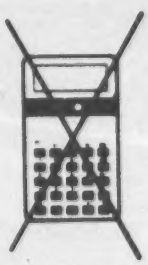
$\frac{11}{12} \quad \square \quad \frac{12}{11}$

$50\% \text{ of } 18 \quad \square \quad \frac{1}{2} \times 18$

$20\% \text{ of } 50 \quad \square \quad 50\% \text{ of } 20$

$\frac{5}{7} \times 100 \quad \square \quad \frac{3}{7} \times 100$

$\frac{1}{2} + \frac{1}{3} \quad \square \quad 0.5 + 0.3$



Complete the calculations. Show your work.

Multiply

$4.79 \times 0.603$

Divide

$377.4 \div 1.2$

Answer: ☐☐☐.☐

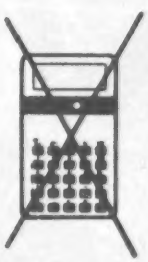
R = 0.☐

Divide

$204.37 \div 1.5$

Answer: ☐☐☐.☐

R = 0.☐☐



## TUG - OF - WAR

Barb, Alice, Jerry, and Ted enjoy playing tug - of - war. Alice by herself can beat Barb and Jerry together. Alice and Barb together are exactly as strong as Jerry and Ted; neither team can win. But Ted and Barb easily beat Alice and Jerry.

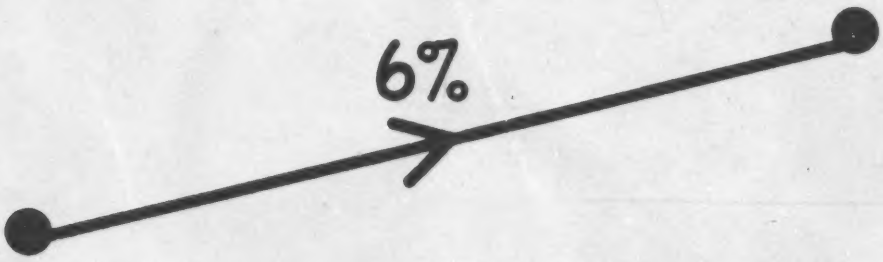
List the children in order of strength.

_____, _____, _____, _____

(strongest) (weakest)

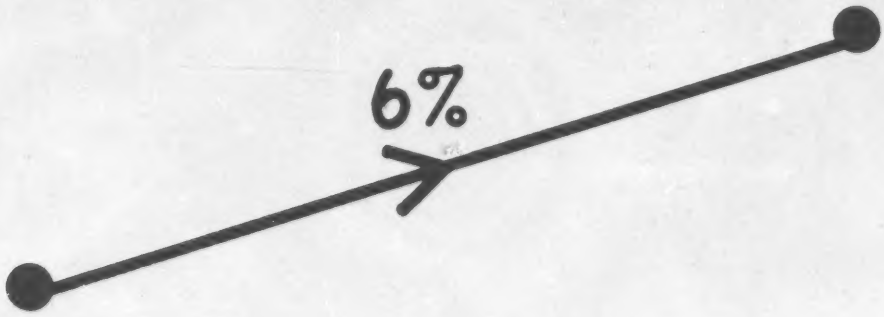
Use the arrow picture to help solve each problem. Label the dots and then solve the problem.

1. Josephine places $65 in a savings account at a bank which gives 6% annual interest.




How much <u>interest</u> does Josephine earn at the end of one year? _____

2. Lester placed his money in a savings account at the same bank. At the end of one year, he collected $2.64 interest.




How much money did Lester put in his savings account? _____

VIP Record Store sells albums at 4 for $25. At this rate, how much would a customer pay for:

20 albums? _____

6 albums? _____

1 album? _____

5 albums? _____

How many albums could you buy with $15? _____

The Discount Store sells albums at 3 for $20. From which store would you buy records? _____

Explain. _____

_____

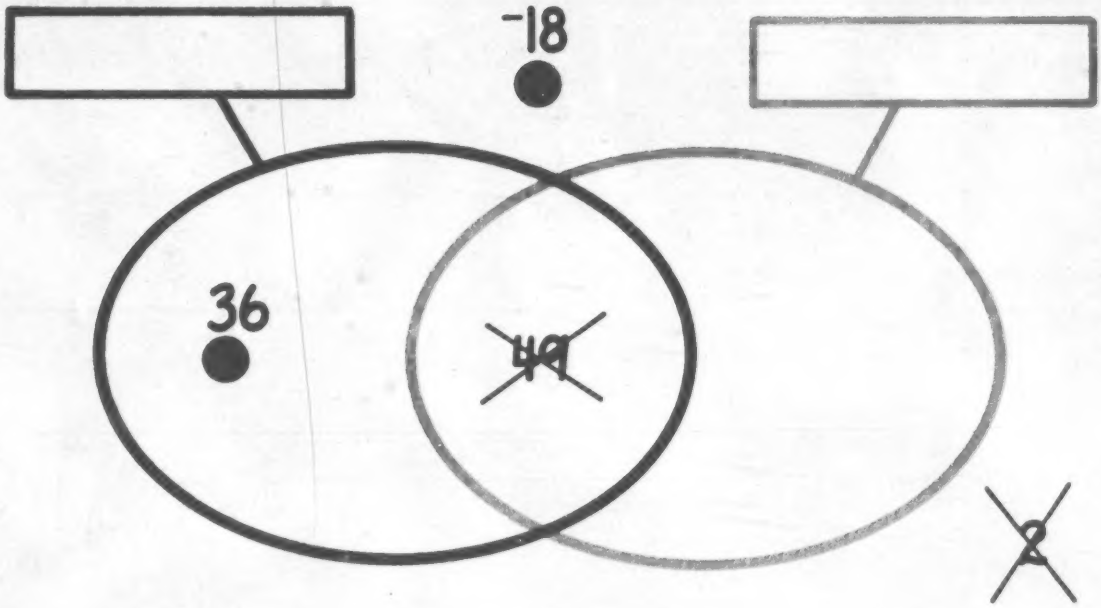
The red tag is one of these:

| |
|---|
| multiples of 3 |
| multiples of 5 |
| multiples of 7 |
| odd numbers |
| square numbers |
| larger than $^-10$ |
| smaller than $^-10$ |

The blue tag is one of these:

| |
|---|
| multiples of 3 |
| multiples of 5 |
| multiples of 7 |
| odd numbers |
| square numbers |
| larger than $^-10$ |
| smaller than $^-10$ |

Label the strings.



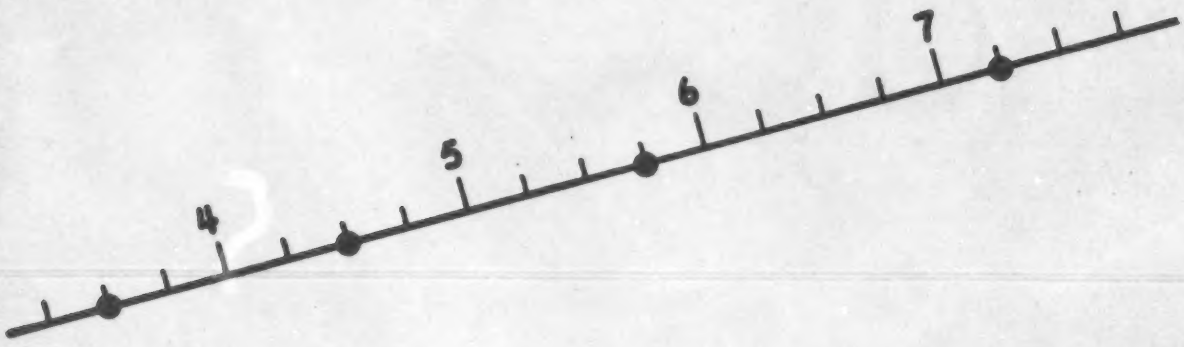



258

Tina is a secret number.

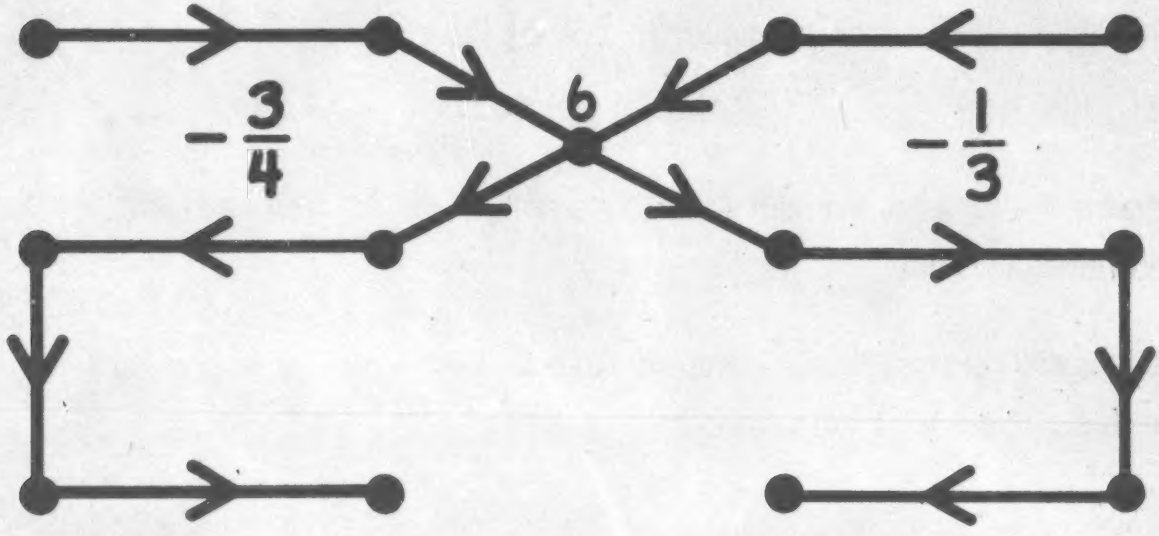
**First clue**

Tina is one of these dots. Label the dots.




**Second clue**

Tina is in this arrow picture.




Tina is _____.

SCALE: 1 cm on the map = 100 kilometers

On the map, what is the length of a line segment between Munich and Hamburg? _____ What is the real distance between Munich and Hamburg? _____

If an airplane that flies 400 kilometers in 1 hour leaves Munich at 9:30 AM, what time will it arrive in Hamburg? (Circle the closest answer.)

10:00 AM  11:00 AM  1:00 PM  4:00 PM

What is the distance between Germany's northernmost point and Germany's southernmost point? _____

Köln is 450 km from Munich and 360 km from Hamburg. Draw blue dots at the two places where Köln could be.

Hanover, a city in West Germany, is 240 km from Berlin. Indicate in red places where Hanover could be.

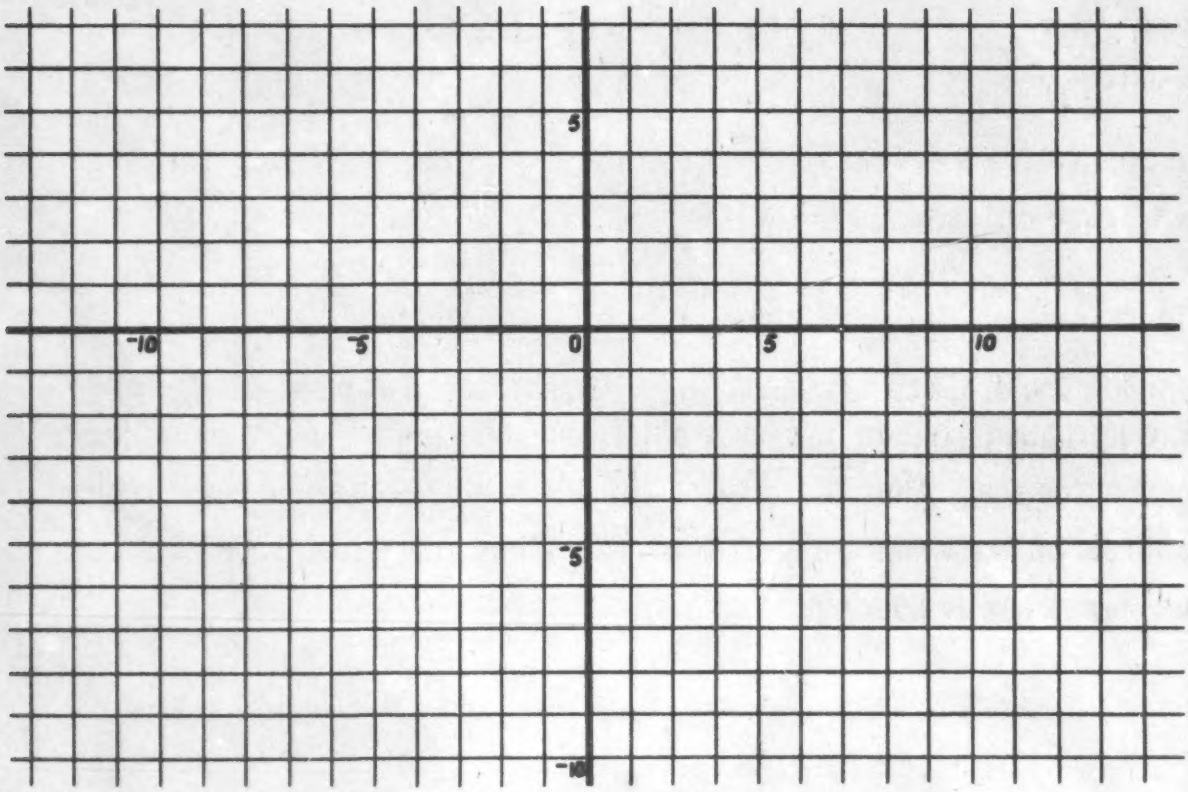
$$a \rightarrow \left(\frac{1}{2} \times a\right) - 2$$

Fill in the blanks. Each ordered pair belongs to the red relation. One is done for you.

(8, 2) (12, ___) (6, ___)

(-8, ___) (-4, ___) (9, ___)

For each ordered pair, draw a dot on the grid. Sketch the Cartesian graph of this relation.



Young Wilbur visited the zoo one day and later told his sister, Julia, about one area where he saw a mixture of ostriches and zebras. Julia asked, "How many ostriches and zebras did you see?" Wilbur answered, "I won't tell you that, but there were 24 eyes and 30 feet."

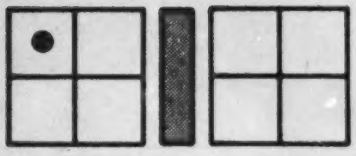
Julia quickly calculated the number of ostriches and zebras. Can you?

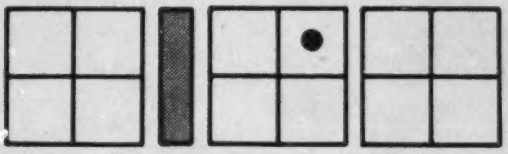
There were _____ ostriches and _____ zebras.

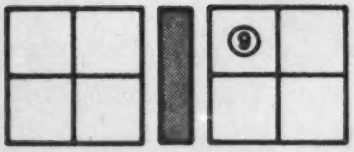
Extra problem: Wilbur saw some other common jungle animals in another part of the zoo. Altogether, these animals had 5 heads and 8 feet. Which animals and how many of each kind could Wilbur have seen? (Hint: the answer is a little tricky.)

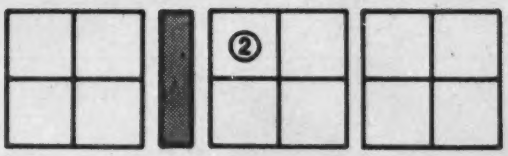
Put each number on the Minicomputer by adding exactly one of these checkers:

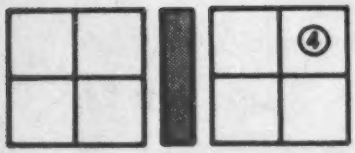
⑥ ⑦ ⑧

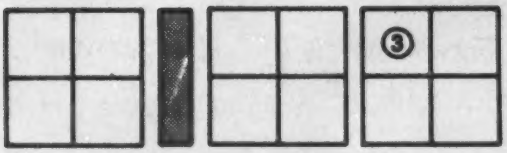
 = 10.8

 = 0.52

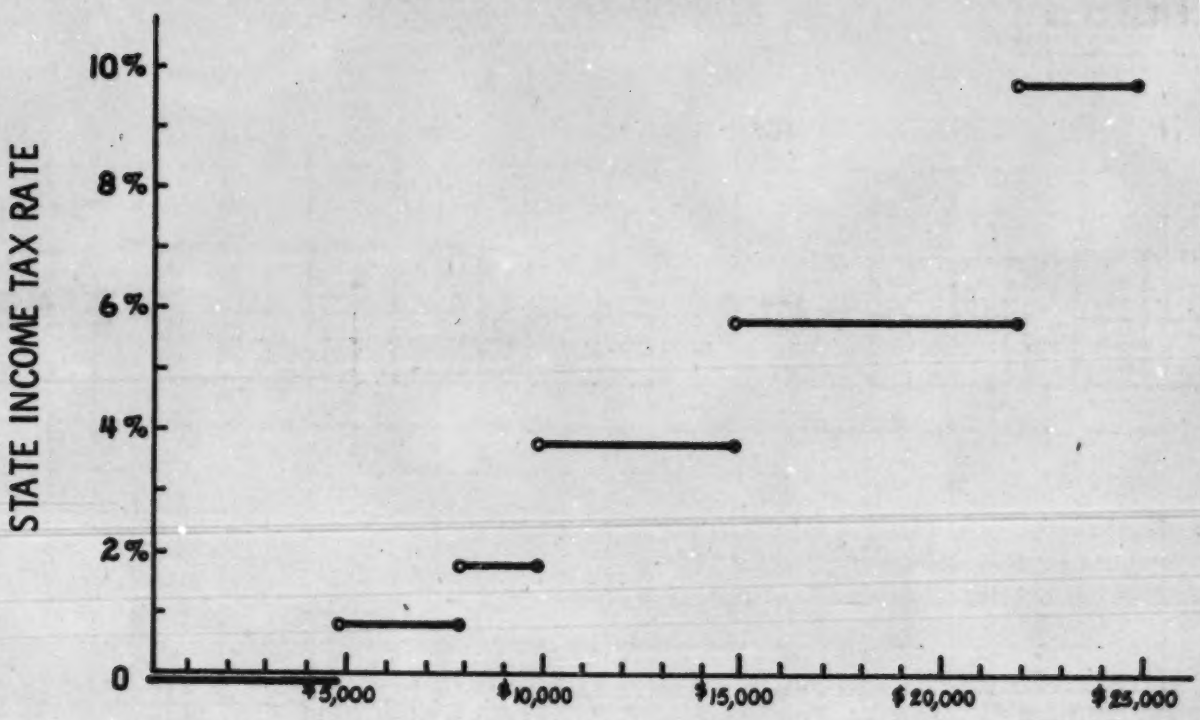
 = 71.2

 = 1.74

 = 7.2

 = 5.04

## 1979 STATE TAX RATE




1. What is the percent tax rate for a person who earns $ 13,500 in one year? _____ $7,300? _____

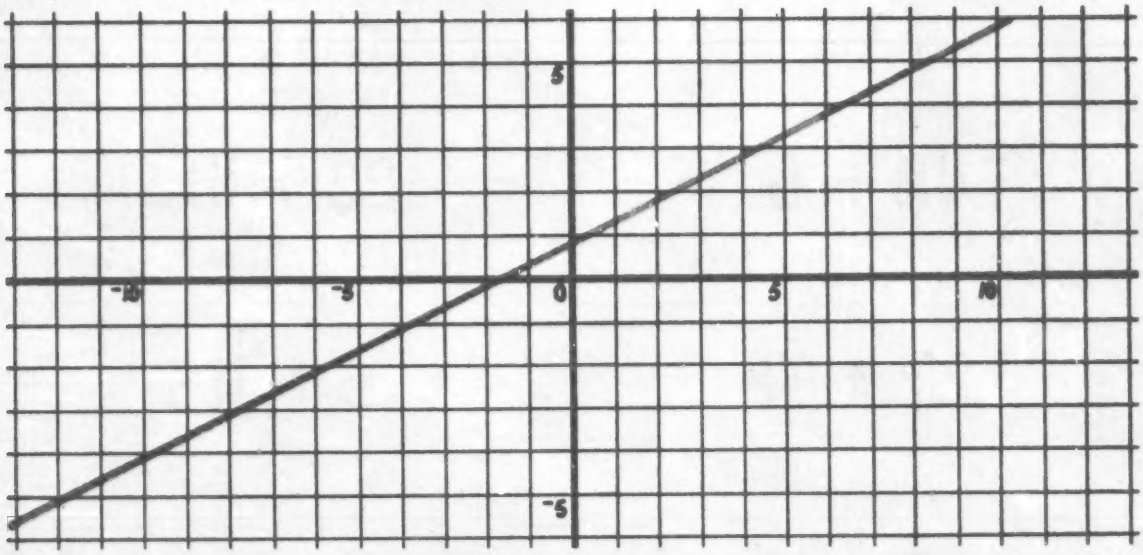
2. Ms. Stein's income tax rate if 6%. What is the largest her annual income could be? _____ Smallest? _____

3. Mr. Dowler earns $ 12,200 per year. How much income tax does he pay? _____ After paying his income tax, Mr. Dowler puts 5% of his money into a savings account this year (1979). How much does he put in the savings account this year ? _____

4. Ms. Lapin's income tax rate is 10% and this year (1979) she paid $2,470 in state income tax. What is her annual income? _____

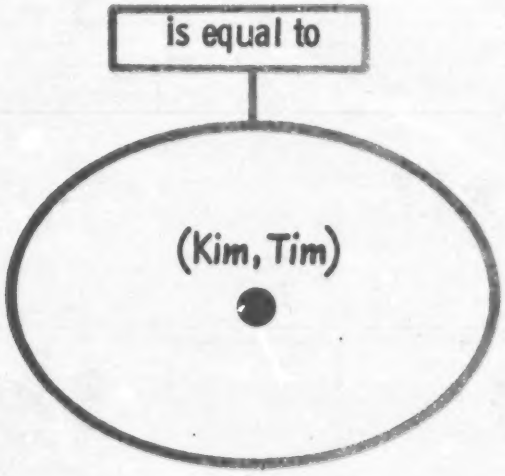
**First clue**

(Kim, Tim) is a dot on the red line.




(Kim, Tim) could be (6, ____), ($^{-}$6, ____), (____, 5), (____, $^{-}$4), (9, ____), ($^{-}$9, ____), and so on.

**Second clue**




(Kim, Tim) is (____, ____).

Put one of these symbols in each box to make a true sentence.

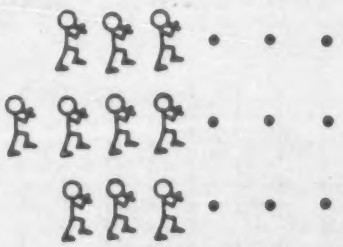
$=_3$ M $=_4$ D $=_5$

| | | |
|---|---|---|
| $48 + 6$ | ☐ | $100 + 18$ |
| $27 + 98$ | ☐ | $5 \times 48$ |
| $7^3 \times 11^2$ | ☐ | $7 \times 11$ |
| $13$ | ☐ | $3 \times 5 \times 13$ |
| $2^2 \times 3 \times 17$ | ☐ | $3 \times 5 \times 17$ |
| $49$ | ☐ | $3 \times 5 \times 7^2$ |

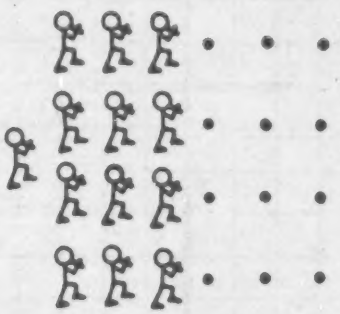
Paton High School's Marching Band is preparing to play in a city parade. Their director is trying to find which formation they should use.

When the band marches in rows of two, poor Waldo is alone in the last row.

When the band marches in rows of three, again poor Waldo is alone in the last row.



When the band marches in rows of four, alas, poor Waldo is alone in the last row.



But when the band marches in rows of five, each row has exactly five people.

What is the smallest number of members the band could have? _____

If the band has between 50 and 140 members, how many students are in the band? _____

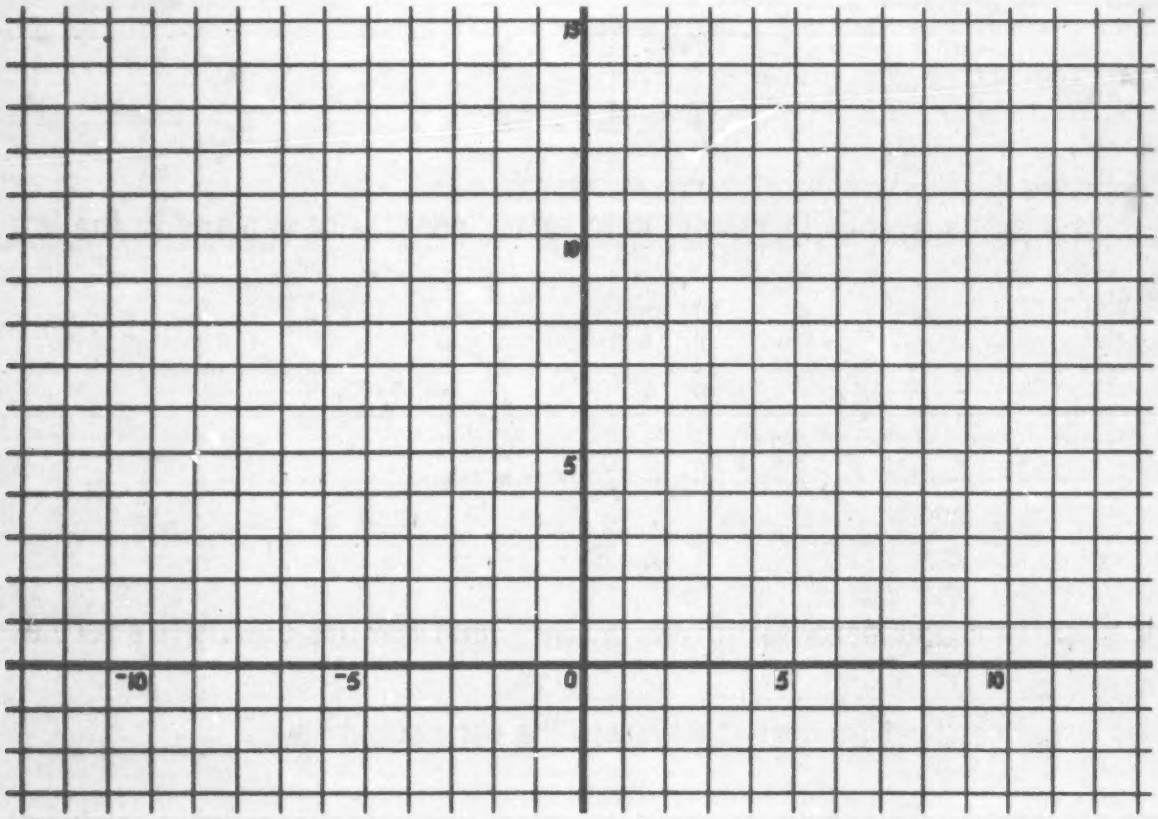
$$a \longrightarrow \frac{1}{2} \times (a+2)^2$$

Fill in the blanks. Each ordered pair belongs to the red relation. One is done for you.

(2, 8) (0, ___) (3, ___)

(-4, ___) (-2, ___) (-7, ___)

For each ordered pair, draw a dot on the grid. Sketch the Cartesian graph for this relation.



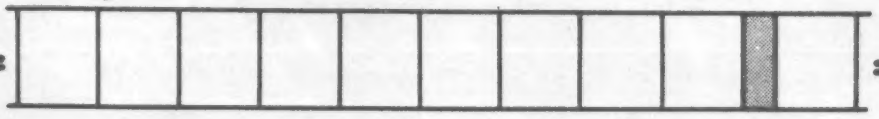

Name two more ordered pairs which belong to the red relation.

(____, ____) and (____, ____)

Put each number on the abacus and fill in the boxes.

Decimal Writing

Base Two Writing

500 =  =

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Base Five Writing

500 = =

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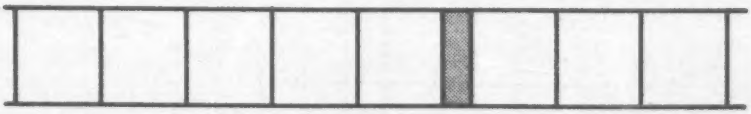
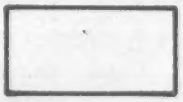
Base Eight Writing

500 =  = 

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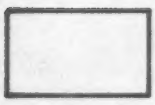
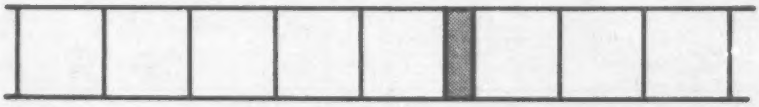
Base Three Writing

 =  = 202.11

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Base Ten Writing

= = 202.11

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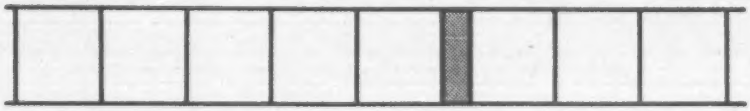
Base Thirteen Writing

=  = 202.11

$$a * b = \frac{a}{b} + \frac{1}{2}$$

Example: $2 * 3 = \frac{2}{3} + \frac{1}{2} = \frac{4}{6} + \frac{3}{6} = \frac{7}{6}$

Complete.

$3 * 4 =$ ☐ $\qquad 1 * 10 =$ ☐

$10 * 7 =$ ☐ $\qquad 2 * 5 =$ ☐

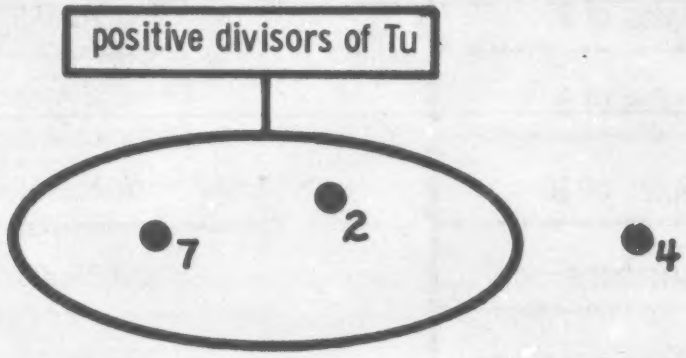
$4 * 3 =$ ☐ $\qquad$ ☐ $* 8 = 1\frac{1}{4}$

☐ $* 10 = 2$ $\qquad$ ☐ $* 5 = 3.3$

$6 *$ ☐ $= \frac{5}{2}$ $\qquad 1 *$ ☐ $= \frac{2}{3}$

Tu is a secret whole number smaller than 100.

**First clue**



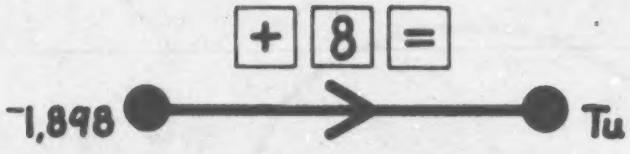

Tu could be _____, _____, _____, or _____.

**Second clue**

$$Tu =_3 2$$

Tu could be _____ or _____.

**Third clue**




Who is Tu? _____

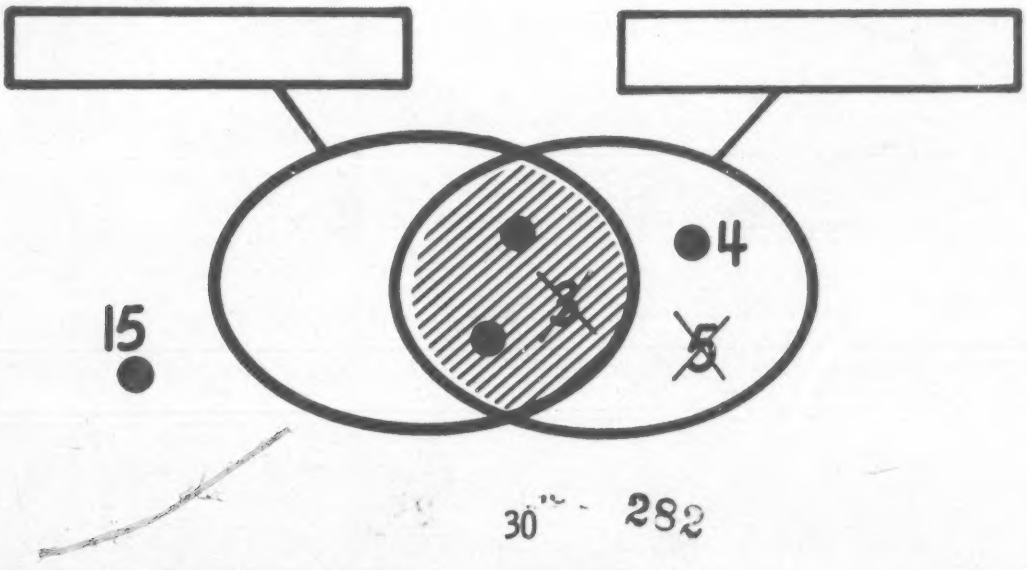
The red tag is one of these:

| |
|---|
| multiples of 2 |
| multiples of 3 |
| multiples of 10 |
| odd numbers |
| positive prime numbers |
| positive divisors of 12 |
| positive divisors of 18 |
| positive divisors of 20 |
| positive divisors of 24 |
| positive divisors of 27 |

The blue tag is one of these:

| |
|---|
| multiples of 2 |
| multiples of 3 |
| multiples of 10 |
| odd numbers |
| positive prime numbers |
| positive divisors of 12 |
| positive divisors of 18 |
| positive divisors of 20 |
| positive divisors of 24 |
| positive divisors of 27 |

Label the strings.



Use the spaces to briefly explain your answers.

The world population in 1979 is about 4 billion. If the present 1.7% yearly rate of net population growth continues, what will be the world's population in 1980? _____ 1981? _____ 1982? _____

In what year will the population be 5 billion? _____

6 billion? _____

Alice, Brenda, and Carl are three of Nabu's friends. When Nabu asked who was the oldest, they made the following statements.

Alice: I am younger than Brenda.
Carl is not the oldest.

Brenda: I am the oldest.
Carl is younger than Alice.

Carl: I am older than Brenda.
Alice is the youngest.

To confuse Nabu, each person made one true statement and one false statement. Nabu was still able to determine who was oldest and who was youngest.

Who is oldest, Alice, Brenda, or Carl? _____

Who is youngest? _____

Circle each person's true statement.